THE RUBBER AGE AND TIRE NEWS

AUGUST 25, 1920 VOL. VII. NO. 10

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THE RUBBER AGE AND TIRE NEWS

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Vol. VII AUGUST 25, 1920 No. 10

Electricity in the Rubber Industry*

By C. W. Drake

Canadian Westinghouse Company's Engineering Staff

It is extremely doubtful if there is another industry which can show as rapid growth during the past year, and one with as great a projected development, as the rubber industry. From casual observation it might appear that the automobile and truck factories were expanding as rapidly, but it is readily seen that the tire industry must not only supply tires for all new equipment, but must also supply at least one set per year for all existing cars. In 1919 the auto registration in the United States was approximately 7,000,000 and in Canada 325,000, which indicates, in a general way, the number of tires that will be required for maintenance only.

From a power standpoint, tire plants are also unique in the large amount of power consumed per machine and per employee. Approximately one h.p. of motor capacity is required for each tire manufactured per day, or, in other words, a plant manufacturing 4,000 tires per day would have approximately 4,000 h.p. in motor h.p. installed. The smallest plant with one calender equipment has from 300 to 400 h.p. installed, and a demand of 200 k.w. or over. A planing mill, machine shop or other industry would be considered a large plant and would require a large floor space if it had such a power-demand.

High Load and Power Factors for Rubber Plants

A load of this nature is very desirable from the power companies' point of view, on account of the high load factor and also high power factor that may be obtained. The load factor based on a 24-hour day will vary from 60 to 75 per cent for plants working three shifts, while for plants working only one shift, it will vary from 20 to 30 per cent. The power factor should not be below 80 per cent, as most of the motors are large, and also as a part of the load (the direct current supply) consists of synchronous apparatus. The power factor of plants using 25-cycle equipment will also be higher than plants using 60-cycle apparatus. In laying out new plants, the frequency is generally determined by the power supply available, but 25 and 60 cycles are equally satisfactory. Somewhat better performance may be obtained on 25-cycle motors, but the cost of a complete 25-cycle installation will be higher than for 60 cycles. For motors of approximately 100 h.p. and larger, 2,200 volts is favored on account of the saving which may be effected in the wiring, switch gear, and often in reduction of transformer capacity. For the smaller motors the voltage will depend principally upon local practice, which, in Canada, favors 550 volts, and in the United States either 220 or 440 volts. There is much to be said in favor of 550 volts, but the choice depends principally on the apparatus which is carried locally in stock.

Of the total horse-power connected in an average tire plant, approximately 80 per cent of the capacity will be installed on mill and washer lines, 10 per cent on calenders, and 10 per cent in miscellaneous machines. Hence a discussion of electric drives for rubber mill machinery will naturally reduce to a discussion of various types and forms of drives for mills and calenders.

As in other industries which have been converted from steam to electric drive, it is found here that many of the earlier drives consist principally in the replacement of the engine by a motor of suitable capacity and connected by some standard method of transmission. All of the early machine tool drives made use of machines designed for belt drive, and it was not until the machine tools were especially designed and constructed for motor drive that the greatest advantages could be obtained. Mill lines driven by steam engines operated at slow speed, generally from 70 to 100 r.p.m., while in England speeds of 40 to 60 r.p.m. were common. The heavy flywheels necessary for satisfactory operation of the engines were often left on the mill lines, and there was considerable discussion at first regarding their use on motor-driven mills. Flywheels are useful only for loads of a few seconds' duration, while peak loads on rubber mills may last for several minutes. Also, to give up much energy a large drop in speed is required, and a motor such as used on mill lines, with an increase in load from full to 100 per cent overload, would slow down only 3 or 4 per cent. Theory and practice have both shown that flywheels are unnecessary, and sometimes even a detriment for this application.

Until quite recently practically all motors driving mill lines were of the induction type, that is, either squirrel-cage or slip-ring. These motors operated at speeds from 400 to 600 r.p.m., and were connected to the mill lines by various types of gear reduction, chains or even belts being used in some cases. Although squirrel-cage motors have low-starting torque and high-starting currents as compared with high-starting torque and low-starting current of the slip-ring motor, numerous squirrel-cage motors are in use. As a rule, if squirrel-cage motors are installed, some form of clutch is used so that the load may be thrown on after the motor is running at full speed, while with the slip-ring motor no clutch is required in order to start the load. But there is another point to consider, namely, the quick stopping of the mills in case of accident. In the old drives this was accomplished by the individual jaw clutches on the line shaft. The mills have practically no flywheel effect, and stop as soon as released. A mill line driven by a motor has a large flywheel effect, most of which is in the rotor of the motor, some in the gear reduction, and a small amount in the mill line. Consequently, to obtain the quickest stop with the least braking effort, magnetic clutch brakes have been extensively used. In stopping, these disconnect the motor from the load and brake on the mill side. The clutch also makes it possible to start the motor light, but if slip-ring motors are used, the clutch may be closed first and the load started by means of the motor, thus reducing wear and maintenance of the clutch. It is entirely possible to design brakes which will stop both the motor and the line, but these are generally plain mechanical brakes, electrically tripped, and the tripping circuit is so connected with the motor control that the motor circuit is opened and the brake applied at the same time. The use of such a mechanical brake makes it possible

* Paper presented before the Rubber Section of the Society of Chemical Industry, Toronto Branch.

to couple the motor to the gear reduction without any friction device.

Another method of stopping the entire mill line is by "plugging" the motor, and as quick a stop may be obtained in this manner as is desired. With squirrel-cage motors "plugging" is accomplished by connecting the motor to a reduced voltage or starting tap with one phase reversed. With slip-ring motors one primary phase is reversed and secondary resistance is inserted to limit the current to any desired value. With any system of "plugging" an automatic control is required, and also some form of mechanical device which opens the control circuit when the motor stops and prevents it from reversing. It is also entirely feasible to stop any induction motor by applying a suitable direct-current voltage to the terminals, but this complicates the control by introducing direct current, and some means is also required for automatically disconnecting the direct current circuit after the motor has stopped.

Synchronous Motors for Mill-Line Drive

During the last few years an increasing amount of attention has been given to the question of plant power factor, due to the very detrimental effect of low power factor on transformers, lines and generating capacity. With a view of increasing the existing power factor many of the larger plants are using or considering the use of synchronous motors for mill-line drive. The starting characteristics of synchronous motors are worse than those of squirrel-cage induction motors, so that for mill-line drives it is always necessary to start the motor light and throw the load on by means of a clutch. So, from a mechanical standpoint, a synchronous motor may be used to replace any induction motor, using a clutch for starting, and this motor may be designed to carry full load, either at 100 per cent power factor, or at a leading power factor of, for instance, 80 per cent. But, besides high power factor, synchronous motors offer other possibilities not obtainable with induction motors. Synchronous motors in capacities of 300 h.p. or over may be built for extremely low speeds, such as 100 to 120 r.p.m., and yet give high efficiency at a reasonable cost. Both the price and performance of induction motors for these speeds would be prohibitive, but the synchronous motor thus makes it possible to eliminate gear reduction and couple the motors to the mill line. Mill-line speeds for new layouts now run as high as 120 or 130 r.p.m., and it is entirely possible that within a few years changes in mill design may make it possible to use shaft speeds of 200 r.p.m. or over. This will make a marked reduction in the cost of the motors also in the clutches.

Although there have been many formula and rules for estimating the horse-power required for various sizes of mills and combinations of mills, tests and experience now show that these are not very reliable. Tests have shown that in the same mill one stock may take twice as much power as another, and besides this, there are other variables, such as delivery speed, friction ratio, pounds of charge per inch of face, number of mills on the line, etc., which have a bearing on the power required. However, records have been obtained which show that the maximum instantaneous peaks may be as high as 3.5 h.p. per inch of roll face. In other words, on a mill line consisting of five 60-inch mills, or 300 inches total, if the maximum load occurred on all mills simultaneously, the total peak would be about 1,050 h.p. If a 400 h.p. motor were used on this line the maximum load would be about 2.5 times the full load rating, but represents a pull-out torque, not difficult to obtain, especially on 25-cycle, 500 r.p.m. motors. As the torques of induction motors vary inversely with the square of the voltage, it is important in laying out mill-line drives to see that there is ample transformer capacity and ample wiring, so that overloads of 100 per cent may be carried without a serious drop in voltage. A 10 per cent drop in voltage would reduce the maximum torque of an induction motor from 3 to 2.4 times full load torques.

Controllers may be classified as manual or automatic, but both may provide the same protection to the motor, as regards low voltage and overload. In order to carry high instantaneous overloads, relays with inverse time elements are used which will carry the overload for a short period, but open on a continued overload. For mill-line service, controllers should provide for reversing in case of emergency, which on low voltage motors may be done by double-throw knife switches, and on high-voltage motors by a double-throw oil breaker, or combination of breakers. The manually-operated controller must be mounted within sight of the motor, and the starting or acceleration of the motor is dependent upon the operator. The automatic control may be located in any desired position, and the acceleration is independent of the operator.

Both alternating-current and direct-current motors are used for driving calenders, but the limitations of the alternating-current drive are well known. The more common alternating-current drive consists of a slip-ring motor with resistance control, and if geared to give a high maximum calender speed, the regulation at half speed, or below, is very poor. In other words, the production is limited by the range in speed possible, and the regulation at low speed. Also, no simple method of dynamic braking is possible. Multi-speed, squirrel-cage motors with two or more frequencies have been tried, but the control and wiring is quite complicated, and although a 4 to 1 speed range is possible, only a limited number of points of control may be obtained.

The direct-current system is acknowledge as most satisfactory, and these are divided into two classes, viz., the single-voltage and the double-voltage systems. With the latter system, using 125-250 volt supply, it is possible to obtain a 4 to 1 speed range on the calender with motors having a 2 to 1 speed range by field control. With a single-voltage system a 4 to 1 range by field control may be obtained, but a more expensive motor is required. There are, however, certain advantages in this system, such as a reduction in the cost of the generating equipment, the switchboard, the wiring and the motor control, which will make it worthy of consideration in many cases. The choice will depend largely upon local conditions and upon the size of motors to be installed.

Calender Control

Similar operations of the calendar may be attained with either the single or the double-voltage control, although the latter is supplied with drum-type master switch, and the former with a field rheostat for regulating the speed. Both these equipments may be operated from a 5-button station marked *start, stop, fast, slow* and inch. When the *slow* button is down and the *start* button is pressed, the motor will accelerate to the slow speed, which is used for "threading in." If the *fast* button is then pressed the motor automatically accelerates to the speed corresponding to the setting of the master switch or field rheostat. As long as the maximum speed is satisfactory for the work that is being done the entire operation may be obtained from the push-button station located on the calender frame. Pressing the *stop* button not only disconnects the motor from the line, but also applies dynamic braking, bringing the motor to a quick stop. Safety switches are also installed, which operate in the same manner as the *stop* button, but after having been opened, must be reset by hand before the calender can be started.

Direct current, either single voltage or double voltage, may be obtained from the alternating-current supply, either by means of rotary converter or a motor generator set. With the rotary converter is required a special set of transformers to supply the correct alternating-current voltage to the rotary, and the combined efficiency of the rotary, together with the transformer, is considerably higher than that of the synchronous motor generator. This higher efficiency often indicates the use of the rotary converter, especially in larger sizes, but the rotary converter has certain limitations which often more than offset the higher efficiency obtained. With the rotary converter best operation is obtained with a field setting to give 100 per cent power factor, and as the fields are compound wound, and as the rotary is generally operating at loads less than full load, the actual power factor is usually somewhat lagging. Besides this, the direct-current voltage has a direct ratio to the alternating-current voltage.

These objections are overcome with a synchronous motor generator set, as a variation in the voltage has practically no effect on the speed and consequently on the direct current voltage.

The Rubber Stress-Strain Curve

By William B. Wiegand

Director of Manufacturing, Ames, Holden, McCready, Ltd., Montreal, Canada.

(*Continued from issue of August* 10, 1920)

These few references to physical researches on rubber may serve, however imperfectly, to illustrate the technical importance of developing physical methods of attack. I have already made reference to the regrettable paucity of information regarding the grade of rubber, state of cure and, above all exact composition of the specimens used in the various experiments.

Joule, Kelvin, Bouasse, Rontgen and the other master physicists were interested mainly in the correlation of the properties of rubber *as rubber* with those of other materials. We, on the other hand, are vitally interested in knowing how one rubber and one compound differs from another in its physical properties. Reference will therefore be now made to some of our own experiments designed to bring out the comparative behavior of a few of the more generally used inorganic compounding ingredients. These included Carbon and Lampblack, China Clay, Red Oxide, Zinc Oxide, Glue, Whiting, Fossil Flour, and Barytes.

Basic Mixing

In order to avoid the tedium of doing a whole series of cures for each mixing, a base mix was developed containing:—

Fine Para	100	parts by weight
Litharge	30	parts by weight
Sulphur	5	parts by weight

By volume this works out at:

Rubber	100	volumes
Litharge	3	volumes
Sulphur	2½	volumes

In this mixing the accelerator and sulphur are so balanced as to preserve a practically flat curing condition over a range of cure from 15 to 45 minutes at 40 pounds of steam. To this base mixing increasing amounts of each pigment were added on the volume basis. The additions were continued until the stock grew so dry and leathery on the mill as to be unworkable. The cures were made in an ordinary laboratory press and the test pieces stretched on a Scott machine. The stress-strain curves were obtained with surprising accuracy by one observer calling out the dial readings corresponding to each increment in elongation as called out by second observer. The well-known inaccuracies of the ring test piece as used in the Schopper machine were thus avoided. Duplicate tests made by different observers checked well within the mechanical accuracy of the machine itself.

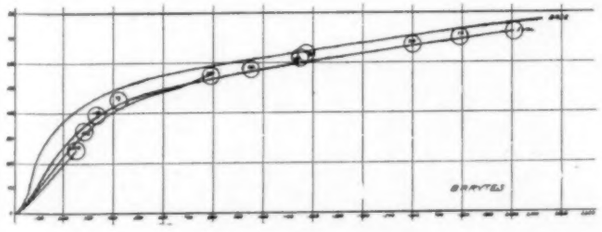


FIG. X—BARYTES

Note the unchanged curvature of the base mixing curve. Increasing additions of this pigment have merely the effect of shortening the curve. Barytes is nothing but a diluent. It adds no useful property to any compound, but on the other hand detracts from both the tensile strength and elongation. For this very reason very large proportions (up to 150 volumes) could be incorporated into the hundred volumes of rubber before the stock became unmanageable. Everybody knows that when you are selling goods by the pound Barytes is the pigment to use. This explains why!

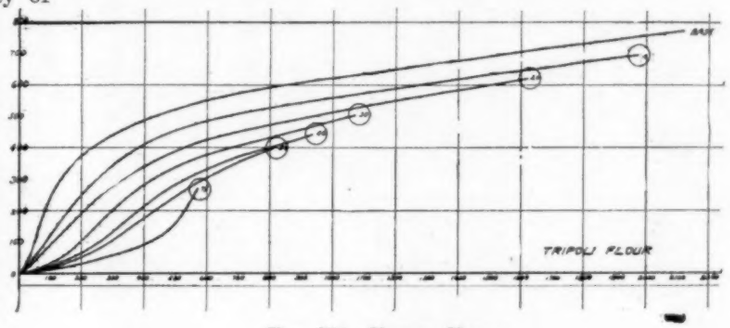


FIG. XI—FOSSIL FLOUR

This pigment shows signs of disturbing the basic stress-strain curve. There is less curvature. The curve has moved toward the "Load" axis. A compound containing Fossil Flour is definitely stiffer than one containing Barytes. However, after 30 volumes have been added there is no more rotation of the curve, which merely shortens, as in the case of Barytes. Now the Fossil Flour particle is smaller than the Barytes particle, and, in our opinion, the change in behavior after 30 volumes is most simply explained by asuming an agglomeration of the Fossil Flour particles, at this stage, into larger complexes, generating less rubber surface. The total quantity absorbed by the gum was in this case only 75 volumes.

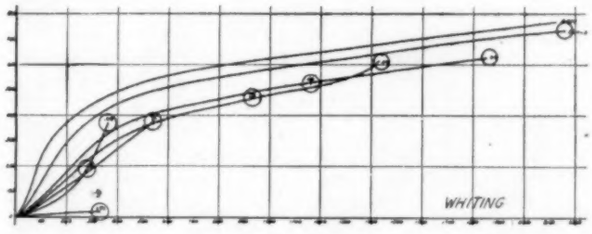


FIG. XII—WHITING

Here again the curve shows some displacement (stiffening) up to an addition of 20 volumes of the pigment. Thirty volumes add nothing to the effect, and we assume that between these two volumes agglomeration has set in. The maximum absorption of pigment was in this case 125 volumes. Any of you who use more than 20 volumes of Whiting in a compound must disclaim any beneficial effects on the physical properties.

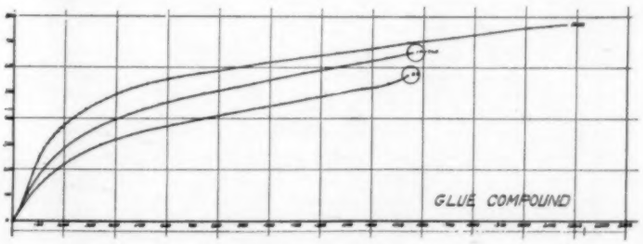


FIG. XIII—GLUE

This was added in the jelly state. Up to 20 volumes there was a definite displacement of the curve indicating that Glue is not a mere diluent, like Barytes, but exerts a definite stiffening or toughening action in a compound. The tensile at break is, however, lowered.

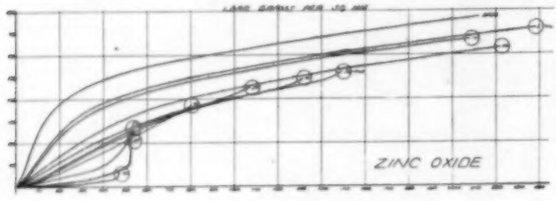


FIG. XIV—ZINC OXIDE

This pigment shows a marked re-inforcing or stiffening effect on the compound. The tensile strength at rupture is maintained undiminished up to a volume addition of 20 volumes.

Beyond this the curve recedes, as in the case of Barytes. Agglomeration of particles has set in. Up to 20 volumes Zinc improves wearing power. Beyond this it partakes more and more of the characteristics of a diluent. Most of you are making daily use of this in factory practice. Your best white treads contain not much more than 20 volumes of Zinc to 100 of rubber.

The maximum absorption was in this case about 125 volumes.

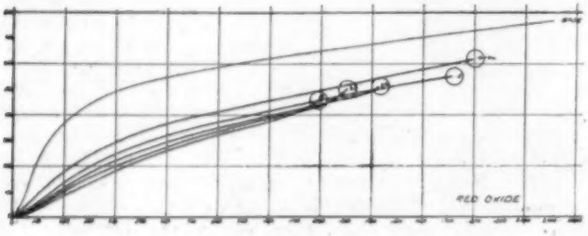


FIG. XV—RED OXIDE

This useful (and sometimes treacherous) pigment shows a re-inforcing action up to 15 volumes. Beyond this is agglomeration. The tensile does not hold up so well as with Zinc.

Carbon Black

We come now to the king of pigments. The re-inforcing qualities of lampblack are here displayed in superlative degree. Instead of being diminished or at best maintained, the breaking tensile is markedly improved. Linear (Hooke's Law) stress-strain conditions begin early and continue unabated up to 40 volumes.

Particle aggregation, with resultant collapse of the reinforcing effect is postponed to 40 volumes, which is, of course, unapproached by any other pigment.

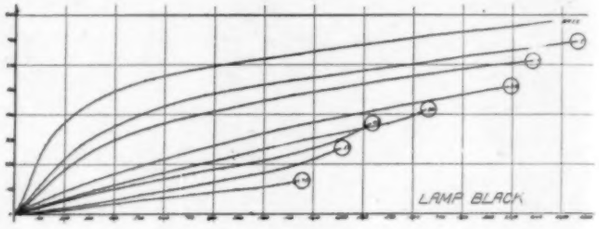


FIG. XVII—CHINA CLAY

China clay vies with Zinc Oxide as a re-inforcing agent. The rotation of the curve is even more marked than with Zinc, although the breaking tensile is less well maintained. Twenty volumes again represents the maximum loading without detracting from the physical properties. Naturally, Clays differ markedly according to their origin and colloidal condition. The above result must be regarded as only an individual finding.

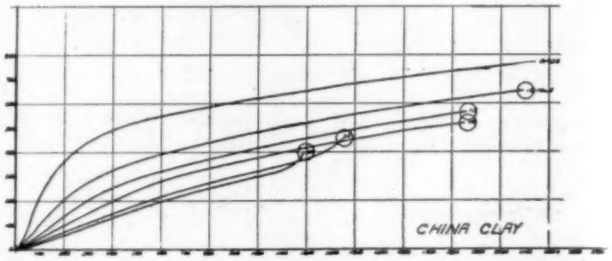


FIG. XVIII—LAMP BLACK

We now approach royalty in the pigment realm. Note the steady, clear-cut, downward progression of the curves toward the load axis, indicating greater and greater toughness. And yet the breaking tensile holds up splendidly. A stock containing 20 volumes of Lampblack possesses stress-strain properties resembling in type those of steel and other rigid bodies; the curve is practically linear, i. e., Hooke's Law applies. There is none of the usual flabbiness at low elongations. It is no wonder such a stock wears better as a tire tread than one made up even of Zinc Oxide or the finest grade of China Clay.

Beyond 20 volumes, however, aggregation again supervenes and the pigment reverts to the Barytes class.

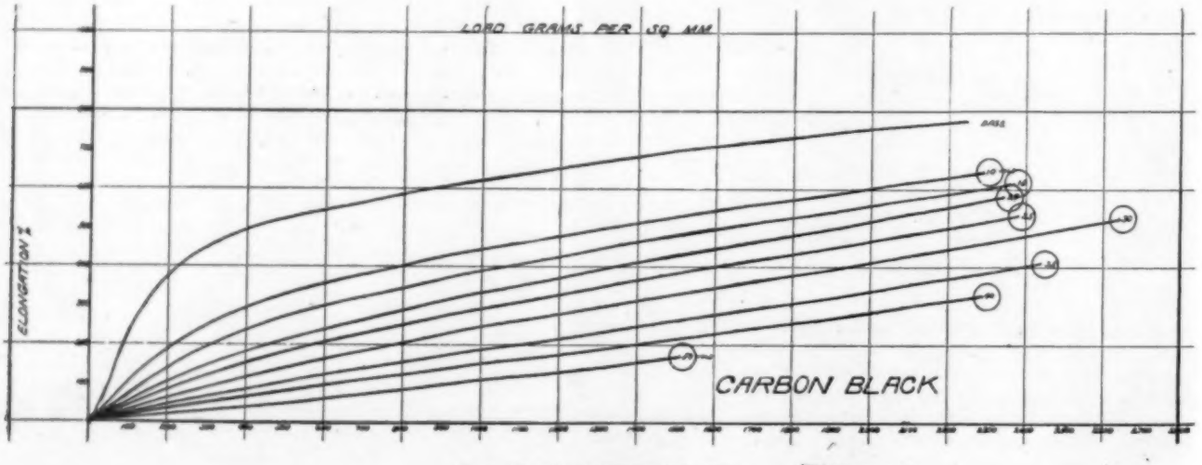


FIG. XVI—CARBON BLACK

Numerical Measure of Re-inforcing Action

The question now arose as to a suitable quantative means of assessing the toughening effect of these various pigments on compounds containing them in varying amounts. One method consisted in measuring the rotation or displacement of the curve toward the load axis by simply taking the height (or elongation) at a definite load, say of 16000 grams per sq. mm. The trouble with this method was of course that it took no account of the lowering of the tensile at rupture, which property varies greatly with different pigments.

The method finally chosen was developed by a consideration of the conditions governing the phenomenon of abrasive wear. Take for example an automobile casing tread. "Wear" here consists in the gouging or tearing out of small masses of gum, due to impact upon the road surface. Now a numerical measure of impact is the work done on each little mass of rubber. *If this work can be stored up without stressing the rubber substance past its rupture point the mass will stay in place. The less energy it can so absorb, the easier it will be torn from its moorings.*

Now the energy absorption is in each case represented by the area contained between the stress-strain curve and the elongation axis. This area was therefore measured by a planimeter and the results calculated to foot-pounds per cubic inch of original stock. (See Figure XIX below.)

The curves below show the remarkable results obtained. Foot-pounds per cubic inch are plotted against volume percentages of pigment added to the base.

The base mix stored up 450 foot-pounds. The addition of Barytes continuously diminished the energy content. Fossil Flour, Glue, Whiting and Red Oxide all behave in essentially the same manner. China Clay, however, is capable of slightly increasing the energy content. Zinc Oxide and Lampblack run neck and neck, showing marked increases. Carbon Black is again the winner, and if not added in excess of 25 volumes may increase the energy content up to nearly 150 per cent of its original value.

Specific Surface

These facts point at once to the conclusion that the presence within the rubber matrix of a disperse phase, such as Carbon Black, which must be regarded as chemically inert, may nevertheless profoundly alter the characteristics of the system. The subjoined table indicates almost beyond a doubt that these effects run parallel with the specific surfaces developed by the various pigment phases. (See Figure XX, page 420.)

The particle diameters here shown were determined microscopically and are of course only approximate, particularly in the case of the finer pigments. The surface developed per cubic inch of pigment was in each case calculated from the observed average diameter of the particles. The values range from 30,000 (Barytes) to 2,000,000 (Carbon Black), and if, for simplicity, we assume that the adhesive force between the rubber substance and the pigment is the same in all classes, the enormous differences in the area of contact are alone sufficient to account for the striking differences in physical properties.

As a matter of fact Zinc Oxide increases the energy absorption of a compound to a greater degree than would be accounted for by its specific surface, and it is safe to assume that in this case there is also an exceptional surface tension behavior.

Work of H. F. Schippel

Finally, I wish to refer to the fundamentally important work done by my colleague, Mr. Schippel, in which he showed that, contrary to general assumptions, compounded rubber under strain undergoes relatively large volume increases which must be attributed to a separation of each pigment particle from its rubber matrix, doubtless forming a vacuum at each pole.

For details of his methods reference must be made to the original paper. He found increases, at for example 200 per cent elongation, ranging from 1.5 per cent for Carbon Black over 13 per cent for Barytes. The volume increases ran roughly parallel with the size of the pigment particles, Zinc

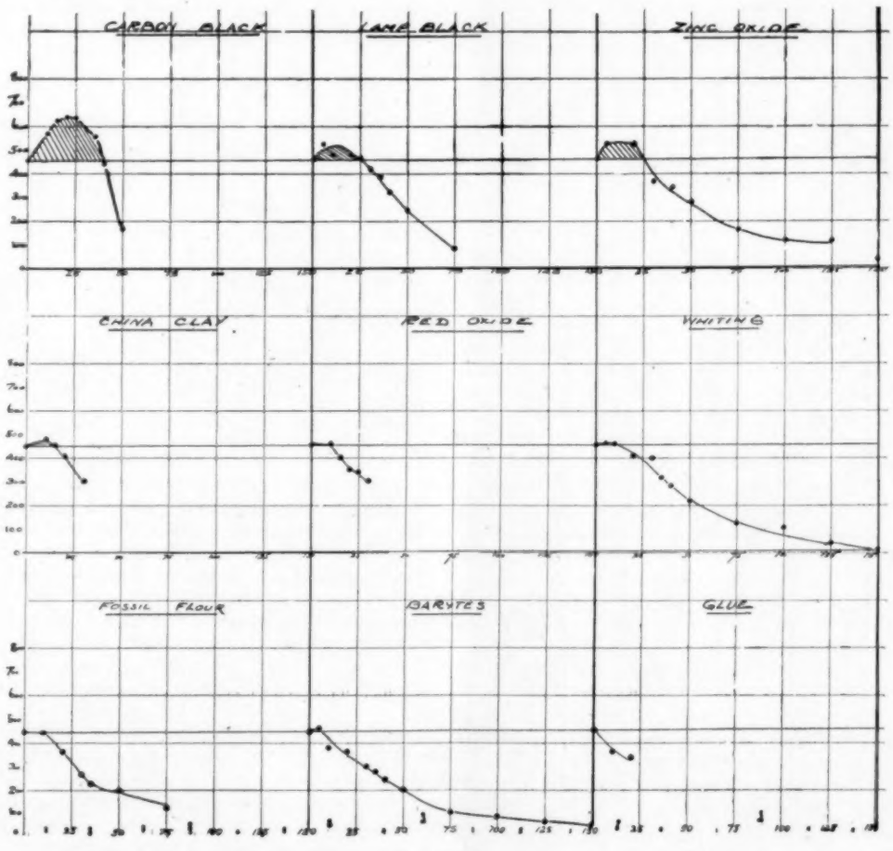


FIG. XIX

Oxide again occupying an anomalous position.

Schippel's results throw a clear light on the mechanism of the re-inforcing action of the finer pigments. These resist the increase of the Free Surface energy necessary to separate them from their rubber matrix. When a Carbon Black stock is stressed to rupture the work done on the rubber phase must be increased by an amount representing the increase in surface energy required to separate each particle of carbon from its surrounding bed of rubber. In the case of a coarse pigment, such as Barytes, this increase in surface energy is negligible.

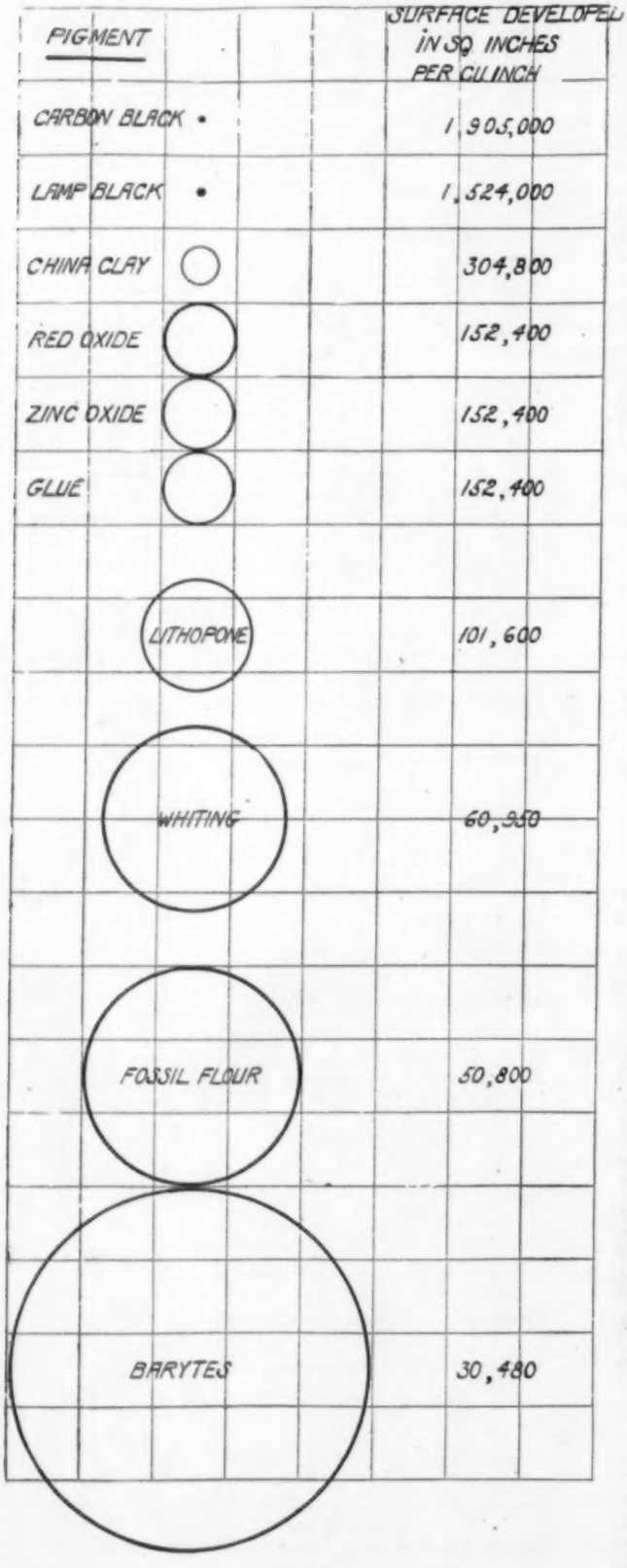


FIG. XX

The fact that with the finer pigments the rubber remains nearly uniformly anchored, instead of pulling free along the poles of each particle, must also result in a more uniform stress on the pure rubber phase and so contribute materially to the enhanced tensile properties and "energy capacity" of the compound.

It is hoped at an early date to make a more careful and detailed study of the surface energy relations involved in the properties of compounded rubber.

PIGMENT	APPARENT SURFACE	DISPLACEMENT OF S.S. CURVE	TOTAL ENERGY OF RESILIENCE	VOLUME INCREASE @ 200% EL.
CARBON BLACK	1,905,000	42	640	1.46%
LAMP BLACK	1,524,000	41	480	1.76
CHINA CLAY	304,800	38	405	
RED OXIDE	152,400	29	355	1.9
ZINC OXIDE	152,400	25	530	0.8
GLUE	152,400	23	344	
LITHOPONE	101,600			
WHITING	60,950	17	410	4.6
FOSSIL FLOUR	50,800	14	365	3.5
BARYTES	30,480	8	360	13.3
			BASE 450	

FIG. XXI

In the above table are brought together for convenience the various properties already referred to, for mixings containing in each case 20 volumes of pigment.

Taken in conjunction with the well-known wearing properties of the various compounds, this table will, I think, bring out the fundamental causal connection between toughness or abrasive power, capacity for storing work, and bond between particle and rubber matrix; all three of these being in the main, functions of the degree of dispersion of the rigid pigment phase.

Time forbids further elaboration of these ideas at this time. One interesting deduction from this work is that perhaps the most direct and accurate way of determining the average fineness of an unknown pigment is to take its stress-strain curve in a standard mixing, measure its area with a planimeter, and compare the energy content with that of a known pigment. The application of this method to a glue compound gave a particle diameter, which was later confirmed by direct microscopic examination after staining.

A Field for Rubber Chemists

The physics of rubber constitutes a future field of research which has as yet been scarcely scratched. Let us hope this field may soon be cultivated by thousands of rubber chemists and rubber physicists the world over, so that in due course there may be a rich harvest of new knowledge, through which the scope and usefulness of our industry may continue to expand.

Rubber's Billion Dollar Stretch

Motor Cars Now in Use and to be Produced this year Will Require Forty Million Tires

By C. W. McLaughlin

Vice-President and Treasurer, Mohawk Rubber Company, Akron, O.

The rubber industry has grown from a small beginning to a mammoth trade, a business which during the past year totaled $1,094,964,000. We are getting close to the steel industry and hope to pass them in the near future. This volume naturally takes considerable credit to finance its operation and progress.

Millions of dollars have been received for new stock in re-financing, also most of the earnings have been allowed to remain in the treasury of the various companies for working capital. One company in Akron started with a capital of $150,000 common stock and increased it to $2,000,000 by stock dividends from earnings through a period of years, therefore giving them ample working capital for ordinary needs.

You cannot find any better credit risk than a rubber company, properly and conservatively managed. Rubber makers have a quick turnover, their goods are not perishable and do not deteriorate readily. The 1920 production of automobile tires in the United States should be 40,000,000 to equip 1,500,000 new cars and maintain 7,000,000 cars now in operation. This will take nearly 5 per cent of the world's cotton production or 400,000 bales. You perhaps do not realize and often wonder how much cotton fabric goes into the manufacture of pneumatics. Tires now contain an average of 4 to 5 pounds of Sea Island or Egyptian fabric. The price of this has increased from 45 cents per pound to $2.75 in the past three years.

The United States now consumes 70 per cent of the world's rubber supply. Rubber consumption in the United States in 1917 was 50 per cent greater than in 1916, double that of 1914, three times that of 1915 and six times as much as a decade ago. The demands of American manufacturers have more than kept pace with the rapid increase in the world's production.

Rubber Consumption Increasing

The War Service Board of the rubber industry in reviewing the world, and especially the United States consumption of India rubber in the last decade, shows that while world production increased from over 69,000 tons in 1907 to over 250,000 tons in 1917, United States consumption grew from 30,000 tons in 1907 to over 180,000 tons in 1917. The world production quadrupled in the ten year period and the United States consumption sextupled in the same time. In 1907 the United States took 44 per cent of the world's output, and in 1917, 71 per cent. A billion dollars of American money has been sent to other parts of the world in the decade ending 1917 for the purchase of the 700,000 tons of rubber brought to the United States in that period, in part from Brazil, but chiefly in recent years from the Orient.

The War Board's records also show that the world's output of "plantation" rubber has increased from 1,000 tons in 1907 to over 200,000 tons in 1917. In the meantime, the "wild" rubber output has decreased from 68,000 tons in 1907 to 53,000 tons in 1917. It was only a decade ago that the rubber plantations established in the Orient by European capital about 1900, came into "bearing" condition, the world's output of plantation rubber having been in 1900 but 4 tons, in 1905, 145 tons, in 1907, 1,000 tons, and from then on a very rapid increase, showing for 1917 over 200,000 tons, according to the latest estimates.

In the meantime Brazilian rubber produced from forests, showed little change in the quantity produced. The production in 1907 having been 38,000 tons and in 1917, 39,370 tons. The producers of forest rubber, chiefly Central America, Mexico and the Congo Valley, have reduced their output from 30,000 tons in 1907 to 13,000 tons in 1917, leaving the United States more and more dependent upon the Orient. Our 1920 estimate is over 345,000 tons of plantation rubber alone.

Even the very rapid increase in world production of rubber from the 69,000 tons in 1907 to over 250,000 tons in 1917, has not kept pace with the demand of the United States. Our imports of rubber in 1907 were 41 per cent of the world's output; in 1912, 51 per cent; in 1916, 58 per cent, and in 1917, 71 per cent of the entire rubber production of the world.

Rubber imports in the United States in the calendar year 1917 were the largest in the history of the trade, both in quantity and value, the quantity imported for consumption having been approximately 182,000 tons against 117,000 tons in 1916. Meantime our exportation of manufactured rubber goods has grown from $7,000,000 a decade ago to $35,000,000 in 1917, while we also re-exported in crude form nearly $6,000,000 worth of rubber imported in 1917.

World's Supply from Orient

Practically all of the plantation rubber produced in the world is thus grown in the Orient. The plantations occupy almost 3,000,000 acres, of which approximately 2,000,000 acres are in the Malayan Peninsula, 750,000 acres are in the Dutch East Indies and the remainder distributed through Ceylon, India, Burma, Cochin China and Borneo, and a comparatively small acreage in the Philippine Islands, where experimental work has given reason to believe that the rubber producing possibilities are very great. The amount of capital invested in the rubber plantations of the Orient is estimated at approximatey $300,000,000 chiefly British, except that in the Dutch East Indies, which is largely from the Netherlands.

Regarding rubber which is the backbone of all tires as well as the main ingredient in hundreds if not thousands of other articles, the most important being belting, which drives the wheels of all industries, boots and shoes, druggist sundries, rain coats and other articles that are indispensable. Railroads use air brake hose. Every car and locomotive has 10 feet or more of air hose. Every mine drill operated by air uses hose. The stock of rubber in the United States made it possible to produce gas masks for the allied armies when needed.

We have a report from Rickinson & Son, of London, which gives the following information to assist bankers and manufacturers and credit men who are desirous of making a forecast of the future of the world's supply of crude rubber.

"Taking the actual world's consumption of rubber during 1919 at 300,000 tons, an annual increase of 15 per cent would raise the demand to over 600,000 tons in 1924. To meet this the plantation estates would have to yield an average of between 450 and 475 pounds per acre.

"In the last 10 years the consumption has increased 27.7 per cent. During the war the demand in the United States was mainly for home consumption. Most of the rubber produced is used for the manufacture of tires, and average production during the last five years from Brazil has been over 35,000 tons, and of wild rubber for the same period over 10,000 tons.

"The Central European countries were large consumers before the war and during the next few years their requirements will no doubt be renewed on an increased scale."

Akron, as you know, is the rubber center of the world, but, in the past few years, the industry has spread to all points, especially in Canada, the western states and the southwest. It is very noticeable that whenever a new tire company is organized that hardly without exception Akron men form a part of that new organization. When the factory is ready to be equipped, they send back to Akron for their rubber working machinery and equipment to a large extent and when they are ready to operate their plants, Akron always furnishes the nucleus of these organizations and only a few weeks ago 300 families from this city were sent to Pacific Coast to manage and operate the first large tire company in the Far West.

Akron in her 24 rubber factories employs 75,000 men and women, and is turning out an annual product valued at $427,760,000. Boston is next in production with $70,000,000 worth, then Trenton, with $35,000,000.

You gentlemen may frequently feel and think that the automobile and its rubber tires are an extravagant waste and the indulgence of luxury. If any of you may possess such thoughts please let me dissuade your minds right here and now. I know of no statistics to prove my position except observation and common sense. I believe that for every mile of pleasure driving there are today 25 miles of business driving. How many of you men live in suburbs of cities and ride to work in 15 to 20 minutes who would spend one hour or more on a car? Has the 45 minutes saved for your business any value?

The farmer who used to take all Saturday to go to market now uses his machine or sends his wife with the produce for market and a return load of groceries. His time for work is increased many hours per week because of his time saving, rubber shod, vehicle.

This is an age of progress and time is our most valuable asset. The auto and truck save time and energy and we have not scratched the surface in their business use. Your railroads are today broken down, through no fault of their own and one way to relieve this situation is to give the short haul to the truck. Let us build our roads better so that the farmer can market his crops when work is slack. If you save farm labor's time by the use of trucks, you help fill up our warehouses and thus reduce the cost of living. Trucks do not eat gas and tires save when in use; horses must eat each day. I tell you gentlemen, rubber is a necessity. Its production and manufacture must be fostered as an essential in the world's progress.

Chemical Abstracts

Influence of Various Chemical Substances on the Physical Properties of Rubber

The author discusses the influence of various chemical substances their anti-coagulating or anti-oxidizing effect when added to the latex.

1. Sodium sulfite. This improves in general all the properties of rubber.
2. Formaldehide. All the properties of the rubber were somewhat poorer, but at most only to a slight extent, not enough to condemn the material for use.
3. Soda. Its action lies between the sulfite and the formaldehyde and is without essential influence.
4. Sodium bisulfite. Causes a slight improvement in the properties of the rubber.
5. Sodium hyposulfite. Has only a very slight influence.
6. Sodium acetate. Improves the properties in small amounts.
7. Sulfurous acid. Acts similar to acetic acid. Increases the extensibility, lowers the plasticity curve, slightly raises the viscosity and no change of vulcanization time.

O. de Vries—Le Caoutchouc et La Gutta Percha, Vol. 15-9645

Acidotex: A Proprietary Coagulant for Hevea Latex

A sample of a proprietary coagulant known as "Acidotex," prepared and sold in Penang, appeared on the local market some months ago and has been examined by the writer with the following results:

Description of Coagulant.—The coagulant consists of a heavy liquid of a yellow color, having an odor of hydrchloric acid.

Result of Analyses.—On qualitative analysis, the sample was found to contain chlorides and sulphates; a considerable proportion of mineral ash remained on evaporation and ignition of the residue. The sample was strongly acid.

A quantitative analysis gave the following results:

Specific gravity at 85° C	1.445	
Sulphuric acid	59.3	per cent
Hydrochloric acid	4.2	per cent
Mineral residue (Wt. per volume)	12.2	per cent
Mineral residue (Wt. per Wt.)	8.4	per cent

The mineral residue consisted chiefly of sodium sulphate which may have been derived from sodium sulphite, sodium bisulphite or sodium bisulphate in the original liquid.

The coagulating effect of the liquid is due chiefly to the sulphuric acid content and, as has been shown previously by experiments carried out in our laboratories, sulphuric acid is an undesirable coagulant of *Hevea* latex.

The use of this coagulant is therefore not recommended.

It will probably be found that the price of the coagulant would be relatively higher than the price of say an equivalent amount of sulphuric acid, which is the chief constituent.

The coagulant is very similar in character to "Coagulatex" which was reported on by the writer in *Agricultural Bulletin*, Vol. IV, No. 11, August, 1916, page 355, but contains a higher percentage of salts.

B. J. Eaton—Agricultural Bulletin of the Federated Malay States

Dry Distillation of Vulcanized Rubber

600 grams of a finely ground automobile tire were distilled fom an autoclave. The receiver was cooled with ice. The distillation began at 50°C. At 40°C, hydrogen sulfide was evolved. From 75°-145°C oil and hydrogen sulfide were driven off. At 170°C the formation of hydrogen sulfide was slowly ceasing. At 185°C acetic acid and aldehyde were evolved. At 100°C, the oil distillation was regular. Acetylene evolved. At 220°C hydrogen sulfide was no longer given off, there passed over only oil besides the acetylene. At 245°C the distillation was ended the whole requiring sixty-five minutes.

The yield of crude oils 28.99 per cent, residue 52 per cent water 8.33 per cent and the gaseous products (by difference) 10.68 per cent.

Crude Oils:—Brown red, slightly viscuous, acid.

On distillation this oil gives 2 per cent under 100°C; 30 per cent from 100 to 150°C; 50 per cent from 150-240°C and 18 per cent cake residue.

The first runnings consisted of Benzal the fraction 100-150°C of toluol, Xylol and Ethylbenzol, and the fraction of dipentene. Isoprene and Heven are not present. Perhaps the rubber is first broken up into two molecules of Isoprene, which by the sulfur present goes over to hydrogen sulfide then to the formation of aromatic hydrocarbons. It is important that the formation of the Xylols takes place at 130-145°C the temperature of the vulcanization.

Wash Water:—This contained 0,503 per cent of acetic acid.

Residue:—This gave 79 per cent ash, which contained 18.15 per cent fine Oxide, 6.51 per cent litharge, 57.20 per cent lime and magnesia oxide and 10.16 per cent insoluble.

Gas:—Of the 10.68 per cent, 4.76 per cent was hydrogen sulfide and 5.82 per cent acetylene.

Andre Dubosc—Le Caoutchouc et La Gutta Percha, Vol. 15-9569

Researches on the Quality of Plantation Rubber—Coagulation With Hydrofluoric Acid

Vulcanizing time:—

The longer the coagulated product is treated on the rolls the longer is the vulcanizing time. Thin crepe vulcanizes slower than thick.

Tensile Strength:—

Thick crepe gives better results than thin. The conversion of the rubber into crepe form appears to have a slight influence on the tensile strength.

Andre Dubosc—Le Caoutchouc et la Gutta Percha, Vol. 15-9593

Conditions are Improving in Akron

Reports from the Rubber Metropolis Indicate that Stocks are Being Gradually Absorbed Again—Results of Retrenchment Are Being Felt Says Bates

No better indication is there of the stability of the rubber tire industry and the continued growth and prosperity of the rubber manufacturing concerns in Akron, Ohio, which produce 66 per cent of the world's total output of tires, than recent announcements by nearly all rubber companies in Akron to the effect that sales are maintaining high levels and are greatly in excess of 1919 figures.

In a bulletin just issued by the Akron Chamber of Commerce, seven past presidents of the Chamber of Commerce, including President F. A. Seiberling of The Goodyear Tire & Rubber Company, and E. E. Workman, Vice President of the National Real Estate Board, give interviews in which they express optimism and the opinion that the present lull in business is merely transitory. All coincide in the view that Akron, the rubber center of the United States, will suffer comparatively little from the effects of the curtailment of credits.

Mr. Seiberling in the Chamber of Commerce bulletin says:—

> "The existing plane of values is certain to be lowered until it reaches proper balance, and this will not be finally accomplished in a month, or a year, but will take many years.
>
> "So far as Akron is concerned, we have reached the bottom in the production of tires. Abnormal stocks over the country are being steadily absorbed and the curve of production within a few months will be steadily upward."

Mr. Seiberling also reports that gross sales for Goodyear for July were $17,185,113.06, which shows a substantial increase over the same month last year, when sales totalled $15,989,349.08. Further indication that sales for 1920 will top those of last year, is shown in the company's sales for the nine months of the 1920 fiscal year, amounting to $162,202,467.21. Inasmuch as Goodyear sales for all last year were $168,914,982.83, it can be seen that the Company up to August 1st had done but $6,712,515.62 less business in nine months than they did for all of 1919. Officials estimate that even if sales for the next three months are put conservatively at $15,000,000.00 monthly--below last year's figures—Goodyear sales for 1920 will be in excess of $200,000,000.00 These figures bear out Mr. Seiberling's assertion that within a few months the extreme pressure of restricted credit will be removed, that the curve of production soon will be upward and that now is the time for sensible optimism toward the rubber industry, which is unsurpassed by none in bright prospects.

E. E. Workman of the National Real Estate Board, in commenting upon the present situation, says:

"This country is not going to commercial destruction. I am not the least fearful over the outcome of the present ripple on the surface of business, because I know the greater master minds backed by the greater number of clear thinking people in the so-called masses have not stopped thinking and working.

"We must stop looking at the fly in the ointment. Because a short period of lull has come upon us to bring us to our senses is no reason for the people to jump at the conclusion the whole machinery of business and industry is going to smash."

George D. Bates, Vice President of the First-Second National Bank of Akron views the situation as follows:

"It is the federal reserve banking system, backed by the great banking institutions, who are responsible for heading the nation from a wild orgy of spending back to the safe and sane path which will ultimately lead to the greenest pastures in which this country has ever found itself.

"The results of retrenchment are already beginning to be felt. Savings accounts are going slowly upward. Money heretofore spent for unnecessary luxuries is being placed in savings accounts."

THE AUTOMOBILE BUSINESS *WILL* GO ON GROWING

Recent curtailment of production in the automotive industry, caused by a combination of unfavorable economic conditions, is only temporary in nature and need not be viewed with alarm.

This is the key-note of a significant statement just issued by the B. F. Goodrich Rubber Co., one of the most prominent institutions in the industry. The statement is particularly interesting to motorists inasmuch as the Goodrich factories have been less seriously effected than the great bulk of Akron rubber concerns. Excerpts from the statement follow:

"The Goodrich Company believes that in spite of the temporary disturbance now existing, the business of America is fundamentally sound. The automobile business is one of the keystones in the arch of business stability and so long as it is not seriously effected, it will go a long way toward sustaining the economic structure. The automobile industry is so interwoven with the business and habits of the American people that its continued progress is one of the most vital factors in American life today.

"The whole mechanism of industrial and social life is built upon the more rapid transit of the motor car. To think of stemming the enormous stream of motor traffic would be the climax of economic folly. To go back to the horse as a means of transportation would be impossible as well as impractical. We cannot move backwards. We must move on and we have got to move by way of the automobile. This is a practical and economical fact. No amount of logic can argue it away.

"We are in a situation today which comes logically after a great orgy of spending. In a large sense we are experiencing the feelings of the morning after. The consumer, for the time being, has put on the brakes. But he is by no means going to stop and just as soon as he readjusts himself he is going to assume a firmer stride than ever. Because he still has gaping wants and needs which production has not begun to fill.

"Let us not for a moment lose sight of this latter fact, namely: That production, excepting in a very few commodities, is far in arrears of the wants of the consumer. Herein lies the fundamental ground work for supreme confidence. It should sound the key-note for the highest optimism. It is a solid foundation upon which everybody can safely stand and truthfully assure himself that American business has in store a sound and promising future."

Officials of the B. F. Goodrich Rubber Company are of the opinion that the present curtailment of production in the automotive industry will be of short duration. They have a firm belief that within a few months the "storm clouds" will pass over and the industry will be more strongly entrenched than at any time in the past.

Working with this idea in mind, they have prepared and sent broadcast throughout the country the above optimistic statement giving reasons why the industry MUST go ahead. These window placards, giving excerpts of the statement, have been sent to more than 50,000 dealers in all sections of the country. They will soon be appearing in the windows of the "automobile row" of every city.

Converse Insurance and Sick Benefits

During June and July, the first fourteen employes of the Converse Rubber Shoe Company of Malden, Mass., to benefit by the new disability insurance received a total of $579.65 in sick benefits. This insurance is a group policy taken out with the Aetna Life Insurance Company of Hartford, which became effective June 1st, 1920, and provides for the payment of 60 per cent of the employe's pay whenever he is absent from work because of sickness or non-occupational accident. Every employe is insured as soon as he begins work for the Company.

This is the second form of protection given its employes by the Converse Company, the first being a $1,000,000 group policy taken out with the Aetna Company in 1918, and insuring against death or total disability. Under this policy, employes receive a $500 certificate at the end of three months' service, and are given an additional $100 at the end of each year following until the total is $1000. Benefits under this policy to date total $10,700. An Employe's Benefit Association, membership in which is voluntary, also gives both sick and death benefits to its members.

Further Details of Peachey's Process

On Wednesday, July 7, a number of the leading British rubber manufacturers were given an opportunity to meet S. J. Peachey and discuss with him his new process of vulcanization which was described in the July 10th issue of THE RUBBER AGE. A number of questions were asked with the result that much light was thrown on the new discovery.

It was brought out that the process was more than a mere laboratory process and that it would apply just as well in a rubber factory. The poisonous gases, hydrogen sulphide and sulphur dioxide which are used can very easily be disposed of is the claim made by Peachey after conferences with two leading rubber plant engineers. Moulded goods can be treated in halves and then joined together by the new process.

With regard to pneumatic tires Peachey stated that he was not quite clear yet about his application for it would probably necessitate new mechanical devices for building up. He would not suggest that it was applicable at present to the manufacture of tires. The advantages of the system, according to Peachey are saving of cost of steam, rapidity of vulcanization, elimination of free sulphur, and consequent increased length of life; hope of increased strength, introduction of coloring matter and the use of organic wastes as fillers.

Converse Gives Vacation to Employes

All employes in the footwear factory of the Converse Rubber Shoe Company of Malden, were given a week's vacation during the last week in July. Vacation pay for the week was given all those who had been in the employ of the company since February 17, 1920, provided they had not been absent more than two days with out a doctor's certificate. This is the first time vacations with pay have been given all factory operatives.

Hunter Dry Kiln Builds

An attractive addition to the plant of the Hunter Dry Kiln Company, of Indianapolis, Ind., has just been completed. It is of brick and steel construction and approximately 105 ft. by 85 ft. in size. This addition which is to be followed immediately by others was made necessary by the rapidly growing business of the company no small part of which is their foreign shipments.

They are now building an all steel kiln designed especially for export trade although equally well adapted for local installations. The company is also enlarging their facilities for manufacturing the metal racks and trays used in connection with their dryer.

The Hunter Dry Kiln Company manufacturers automatically controlled humidity driers and controls the Hunter patent process of drying rubber, a method which when introduced by them was an entire revolution from former methods.

Advertising Managers Council Convention

The Advertising Managers Council of the Motor and Accessory Manufacturers Association, comprising the executives of the principal companies in the automotive field, will hold a convention at Camp Nela, Cleveland, Ohio, on Friday and Saturday, September 17th and 18th. The Advertising Managers will put up in tents for this convention and will also have a chance to enjoy mid-night tennis and swimming.

Recent developments in the automotive industry indicate that the September meeting of the Advertising Managers will be extremely interesting and important. The executive committee of the Council, of which E. C. Tibbits, Advertising Manager of the B. F. Goodrich Company, is chairman, is working on the program for the meeting, which will be announced at a later date.

Polack Sells Out to Buckeye

Hugo Hoffstaedter who organized the Polack Tyre & Rubber Company in 1912, has resigned as its president, having disposed of his interest in this business to the Buckeye Rubber Products Co. of Ceveland, Ohio. This concern will continue the manufacture of "Polack Tyres" under the same trade name, with largely increased facilities.

Mr. Hoffstaedter is well known in the tire industry and will be remembered as one of the pioneers who introduced the old Continental Tire into this country more than fifteen years ago. He installed the first pneumatic tire repair and service station in New York for the Continental Company and after that pattern, made similar installations in the principal cities of the United States. He was affiliated with the auto industry in England and other foreign countries and has traveled in most of the countries where automobiles are used. Mr. Hoffstaedter's future plans have not been announced.

DeLisser Predicts Prosperity

Interesting observations and reflections on business conditions of the day are contained in a statement recently issued by Horace DeLisser, president of the Ajax Rubber Company, Inc. Mr. DeLisser, as head of one of the great automobile tire manufactories, is known as a keen observer, thorough analyst and a conservative forecaster. Hence his views and predictions are of more than common importance.

"There seems to be an almost universal tendency," Mr. DeLisser asserts, "for the helmsman in business to worry—to cast ominous glances skyward and wonder from which quarter the wind, if any, is coming next.

"Carrying out the yachting metaphor, isn't it better to head into whatever wind there is with all sales set? I'll answer my own question—and decidely in the affirmative.

"The manufacturer of a quality product, be it automobile tires, whirl-i-gigs or whatnots, has little to worry about so long as he maintains the quality standard on which his success in the past has been built.

"In some lines of American manufacture since the war, there has been a marked effort to maintain a low price at the expense of quality. This of course is dangerous, for poor quality is remembered long after the price is forgotten, and goodwill suffers immeasurably. When goodwill suffers, business goes bad. That is an axiom. Goodwill is the most enduring asset in all business, if properly safeguarded.

"It is the soul of business, the tangible result of service rendered. It is the foundation on which gigantic industry has been built and innumerable fortunes piled up.

"The present year," Mr. DeLisser continued, "so far as the tire business is concerned, has been an unusual one. The heavy selling season has been somewhat delayed by unfavorable weather conditions in most localities. Unseasonable weather has held back the automobile tourist, and consequently delayed the big tire purchases of the car owners.

"However, we are looking forward to a most successful season. Don't forget that more cars are running today than ever before in the nation's history. Hundreds of thousands more will be running next year. So conditions point to continued good business for the manufacturers of quality tires.

"We are looking forward to great development of the pneumatic truck tire division of our business. Production of truck pneumatics is being increased as rapidly as possible. We are unable to meet the demand adequately, though every effort is being made to do so.

"Business is not confronted with a crisis—except that type of business where a crisis is justly due and deserved. Business deserving of success is succeeding. and so long as its success continues to be deserved, so long will its success continue."

News of the Rubber Metropolis

Seiberling Predicts a Bright Future—Leavitt Becomes Amazon Sales Manager—Goodrich Not to Manufacture Zeppelins—Mason Announces Changes in Personnel

Seiberling Predicts Bright Future

"No industry in the country has a brighter outlook than the tire industry notwithstanding the talk of reduced automobile production," declared President F. A. Seiberling of The Goodyear Tire & Rubber Company in a recent statement to the Akron Chamber of Commerce.

"Eight million cars are now running in this country. Within five years this number will approximate 15,000,000 cars —all with tires—the major part of which must come from Akron. The rubber industry is on a solid foundation, unsurpassed by any industry in this country.

"The debris of the war cataclysm that rocked civilization and catapulted prices to the highest plane ever known is steadily settling through the influence of natural forces. The process is orderly and certain. It is not confined to this community or to this nation, but is world-wide. The existing plane of values is certain to be lowered until it reaches proper balance and will not be finally accomplished in a month or a year, but will take many years.

"The people of every civilized nation will have their share of distress in this process of re-adjustment—those of the United States probably the least of all, because our natural resources are greatest of all.

"The business situation is acute at this time while the adjustment to the shock of restricted credits applied by the Federal Reserve banks and the effect of the railroad strike are being made. Within a few months this extreme pressure will have been removed, but the orderly process of deflation of war values will move steadily to an equilibrium. So far as Akron is concerned, we have reached bottom in the production of tires. Abnormal stocks over the country are being steadily absorbed and the curve of production within a few months will be steadily upward.

"The present depression is transitory. It will be overcome with least difficulty if everyone will do more work, waste less and talk less. We need no further enlightenment about our "rights"—we need a higher understanding of our duties.

"We consume more than we produce. More production, with more economy in our spending, is the only solution. This is the time for sensible optimism. Too many people have shown lack of confidence. They have worried and talked, instead of working. This has helped make the situation more serious. Such an attitude is destructive. Everyone who is conscientiously desirous of doing his duty to himself, and to his country, will in times like this keep faith, do more work and keep cool."

New Amazon Sales Manager

A. H. Leavitt, long with the B. F. Goodrich Co. sales department and more recently with The Akron Rubber Mold & Machine Co., is now general sales manager for The Amazon Rubber Co., also of Akron.

For eleven years, Mr. Leavitt served with the Goodrich company. Two years

A. H. Leavitt

of that time were spent in production departments and during the remaining nine years he was connected with the sales organization in various capacities.

He left Goodrich to accept a responsible sales position with The Akron Rubber Mold & Machine Co., which he recently resigned in order to get back in the tire business.

Goodrich Not to Manufacture Zeppelins

(Special Akron Correspondence)

Stories recently published in Akron that the B. F. Goodrich Co. had obtained patents on German Zeppelins and planned to manufacture aircraft patterned after the famous dirigibles were denied emphatically at the offices of the company.

The report, it is said, first reached Akron from Europe. Goodrich officials including President B. G. Work returned from a trip abroad about that time. John Gammeter, experimental engineer for the Goodrich, was starting for Europe at the same time. These trips by officials gave credence to the report.

Changes in Mason Personnel

The Mason Tire & Rubber Co. has created as a part of the factory organization the factory engineering department with H. W. Sidnell, who has been with the company from its beginning, as manager of the department.

Mr. Sidnell becomes manager of this new department after having first been in charge of the cost department for the company, and later as assistant secretary and office manager.

This new department which has been created will consist of a number of subdivisions, namely, the planning division, the tire design division and the salvage division.

The planning division will have charge of departmental system, the routing of materials and the factory manual.

The tire design division will be in charge of all specifications and equipment. The duties of the salvage division will be collection, sorting, storage, reclaiming and sale of salvage.

When this new factory engineering department is fully organized it will consist of from eight to ten men. Changes in the organization incident to the creation of this department include the transfer of E. B. Harvey, now of the cost department, to the managership of the planning division. W. W. Peffers of the raw material department will also be in the planning division. W. S. Agnst, present draftsman, will have charge of the tire design division.

Miller Sells Department

The Miller Rubber Company, Akron, Ohio, announced August 9th the sale of its dipped goods department to the Seamless Rubber Company, of New Haven, Conn.

Increased automobile tire business is given as the reason for the discontinuance of this department which the company has operated continuously for twenty-seven years, manufacturing: household gloves, surgeon's gloves, acid gloves, finger cots—all kinds, dipped bathing caps—No. 357-358, drainage gauze covers, dilator covers, balloons.

The disposal of this department does not effect the balance of the Miller line, except that it gives a greater opportunity to concentrate efforts on other departments. The company will continue to manufacture and supply, as usual, complete lines of: water bottles, fountain syringes, combination syringes, combination attachments, tubing and tubing lengths, bathing caps, infants specialities, molded invalid cushions, nipples, sponges, catheters, men's belts, and all present lines except dipped goods.

United States Sales Increase

Net sales of the United States Rubber Company for the six months from January 1st to June 30th, 1920, were $129,588,986.000 an increase of $30,099,615.00 over the corresponding period of 1919. The net income, after deducting all interest charges and after allowing for depreciation and federal taxes, was $13,690,924.00, an increase of $3,059,490.00 over the corresponding period of 1919.

Rubber Accidents Decreasing

How serious accidents are being reduced to a minimum in the rubber and tire factories of the country was discussed recently by S. M. Schott of the United States Tire Company, chairman of the Rubber Section of the National Safety Council.

"It is remarkable how the rubber companies of the country have been able by careful attention to safety devices, by education and by revision of manufacturing processes to cut down the number of serious injuries among their factory workers. My own company has in the course of three or four years made a reduction of forty per cent in its accident cases, and has made even a better showing on the serious cases.

"Because of the danger of losing hands and arms in rubber mills and calenders, and the number of injuries received through the falling of heavy cases and moulds, the tire factories always expected a high average of accidents, and before the safety work was inaugurated serious accidents were very common. The educational work carried on among tire workers has taken the form of constantly placing before the workmen the danger of dressing improperly, of carelessness and of performing any operations except in the manner dictated by the rules of safety. Our safety committee have studied their manufacturing processes with a view to eliminiating risks and of affording proper protection against injury. As a consequence of these intensive efforts serious injuries have dwindled to a point not deemed possible a few years ago, and the total number of accidents has shown a decrease each year.

"It should be remembered, too, that the decrease in the total number of accidents has been registered in the face of a more careful recording of minor mishaps than was the custom in the days before the safety council began its work. Today if a worker gets something in his eye or scratches a finger, he is urged to report for proper treatment, and a record is made of it. These precautionary treatments prevent many a trifling injury from developing into something more serious, but at the same time tend to increase the number of recorded accident cases. Many a case that is now fully recorded would have received no attention whatever in the old days."

Observe These Rules
and Prevent Accidents
of This Kind
Before placing a tire on finishing stand, be sure that the arm is locked in proper position and that spider points are adjusted to the size desired.
Do not attempt to change the position of spiders by turning tire around before it is tightened. Your "Buddy" can help you by lifting the tire and moving the spider.
Let It Fall
When a heavy object starts to fall, don't try to stop it like this man is doing
As it may land on you and break your leg.
Stand In the Clear

National Safety Council—Rubber Section
POSTERS USED TO HELP REDUCE ACCIDENTS IN RUBBER FACTORIES

Crude Rubber Importation

According to a bulletin of the Mid-West Rubber Manufacturers' Association, dated July 30, the statistics of crude rubber importations for June, 1920, show a total of 14,881 tons as against 16,319 tons for June, 1919, a decrease of 1,438 tons, and a decrease of 12,457 tons from the May importations of 27,338 tons. June's record of importations was by far the smallest of any month of 1920 so far.

The total record for the first six months of 1920 totals 151,889 tons against 113,729 tons for the first half of 1919, an increase of 38,160 tons for the first half of 1920.

It still looks as though importations for 1920 would total 300,000 tons as against the 231,510 tons imported in 1919, unless the price situation induces producers to hold their stocks in the Far East.

Guayule Industry Revives

Several large manufacturing plants in Mexico, which have been closed down for five or six years, are to resume the manufacture of guayule rubber. All the factories are being overhauled.

The available supply of guayule shrubs from which the crude rubber is obtained is greater now than at the time the industry was started, more than sixteen years ago. This is due to the fact that the cut-over lands, especially those upon which the shrub was cut off at the roots, have produced within the last few years a crop of the brush that is more bountiful than the original growth.

American Chemical Society to Meet

Announcement has been made to the effect that the next meeting of the American Chemical Society will be held in Chicago, September 7—10. At this there will also be a meeting of the Rubber Division of the Society.

Arnold H. Smith, secretary of the Rubber Division has issued the following bulletin relative to trade names for rubber accellerators and compounding ingredients:

At the spring meeting of the Rubber Division of the American Chemical Society, the question of trade names for accelerators and compounding ingredients was discussed. It was pointed out that thiocarbanilide was offered on the market under no less than six different names. There are accelerators offered which consist of a certain percentage of some common accelerator, the remainder being a cheap filling ingredient. One of the most notable examples of this type is a mixture of starch and alkali which is now offered for sale under a trade name at a price which is out of all proportion to its cost. Similar conditions exist to a lesser degree in the market for compounding ingredients.

The Division wishes publicly to announce its stand in the matter, which is the reflection of the opinions of the members present at the last meeting. As a body organized for the advancement of the industry, we

1. Do not object to the proper use of a trade name for a product. By proper use, we say that it may be more convenient for the general public to use a trade name rather than a long chemical term. We include under proper use the fact that the manufacturer shall willingly inform the users of his material what the constituents are which he offers in his product.

2. Most strenuously object to the marketing of unknown products which are sold under trade names and whose true constituents are supposed to be kept secret. This objection is two fold: we feel that the advancement of the industry is retarded by the use of unknown materials, and also that the "public" becomes the "goat" by the indiscreet use of unknown accelerators.

In order that the members of the Division may have as full information as possible, we invite statements which have to deal with the subject matter presented, from manufacturers or jobbers of materials which are sold under trade names. The statements made concerning these products may be made publicly or to the secretary of the Rubber Division.

The Division also invites all of its members and other rubber chemists to submit results of their analyses of these materials to the secretary of the Division so that these various analyses may be filed for reference of the members of the Division.

Haab in Northwest for Rubber Products

James E. Haab, formerly factory representative, of the Rubber Products Co., Barberton, Ohio, has recently been assigned the Northwest District, having charge of the sales in that section.

Important Statistics of the Industry

New German Export Duties Announced—French Imports and Exports—Quarterly Report of New Jersey Zinc Issued—Akron Stock Prices—American Rubber Patents

Revised German Export Duties

The Deutsche Allgemeine Zeitung points out that Germany, with the object of regulating its foreign trade, has had recourse to a system of duties on exports, and in so doing has resorted to the ad valorem system. The duty represents a percentage of the value of the goods which varies according to their quality and importance to Germany.

A proclamation, dated April 17, 1920, relating to further export regulations, in addition to those contained in the ordnance concerning the control of foreign trade decrees that the duties are to be levied in accordance with a special tariff based on the value as laid down in paragraph 9 of the export regulations. Export duties will only be levied on goods whose export is generally prohibited. An opportunity is thus given to control goods subject to the duty when the export license is applied for, as it must be in every case. In the case of goods whose export is permitted no duties are levied unless the export of such goods is subsequently forbidden. No duties are imposed in the case of interrupted transit trade. According to paragraph 3, no duty will, until further notice, be levied on export to the free town of Danzig or to the Saar and Memel districts, or to those of Eupen and Malmedy, provided that the goods exported are for the use of the districts concerned. Paragraph 4 provides that in the case of export of articles which are destined for exhibition at foreign fairs and markets, or those ordered on commission, or sent on approval or for repairs, and which return home unsold, the export duties may be refunded.

According to this new ruling all kinds of rubber and rubber goods are subject to a duty of 2 per cent. These new regulations came into force on May 1, 1920.

French Imports and Exports

Imports into France from the United States for the first three months, January, February and March, 1920, were as follows: For india rubber and gutta percha, crude and massed, 1,079,000 francs; for 1919, 769,000 francs and for 1913, 2,482,000 francs. The values of the imports of india rubber and gutta percha manufactured articles were for 1920, 28,729,000 francs; for 1919, 8,100,000 francs and for 1913, 205,000 francs. Exports from France for the same period for crude rubber and gutta percha were 8,894,000 francs for 1920; 89,000 francs for 1919 and 14,804,000 francs for 1913.

New Jersey Zinc Report

The quarterly report of the New Jersey Zinc Company for the three months ended June 30, 1920, shows net income, after Federal taxes and charges, of $2,756,577. This was equal to $6.56 a share on the $42,000,000 capital stock outstanding, compared with $7.50 a share in the first 1920 quarter. In the corresponding period last year $4.26 a share was earned. Total income for the quarter was $3,341,577, compared with $1,071,337 in 1919. After payment of interest, taxes, other charges and dividends there was a surplus of $1,076,577, compared with a surplus in the corresponding 1919 quarter of $91,337.

Service for American Firms in France

For American rubber manufacturers who are making efforts to increase their foreign business, the American Chamber of Commerce in France is in a position to render assistance. It has inaugurated a catalogue-file system, the object of which is to place catalogues of American firms before important and reliable French buyers.

Under this method preliminary correspondance can be abolished. French buyers come to this Chamber and, from an inspection of the catalogues, choose the articles they desire, without loss of time. They can then communicate immediately with the seller without having to wait two months or more to receive trade literature.

Your catalogues in our file serve the purpose of a representative in France. It brings your line of goods to the attention of French buyers and consumers. The catalogue file is given extensive publicity, and all important French firms know of it. It is under the direction of courteous and experienced personnel.

A small annual fee of ten dollars is charged by the Chamber to cover expenses incurred. This fee entitles each subscriber to have catalogues on file for the period of one year. The fee also entitles the subscriber to ten different headings in the Catalogue Card Index. If the subscriber desires to be listed under attitional headings (more than ten) an additional fee of one dollar per heading is charged.

Upon receipt of catalogues, address cards are filled out, showing name and number assigned to the catalogue. These cards are systematically filed under the headings given by the subscriber. The catalogues are placed in individual file boxes, each box being given a number. This number is placed on each of the file cards.

For example: a firm interested in the sale of hardware wishes to appear under the following headings: "Bolts, Files, Locks, Saws, Hammers, Nails, Screws, Faucets, Cutlery and Wrenches." Accordingly, ten address cards are filed under the titles enumerated, each card bearing the catalogue number. The system is so simple that prospective French buyers can easily obtain the catalogue in which they are interested.

Akron Stock Prices

(Special Akron Correspondence)

A general decline in all stock prices has taken place during the past fortnight. The condition of the tire market has been reflected in the inactivity of stocks and several have reached a new low level. Reports indicate an upward revision soon. Firestone common has declined to 115 while Goodrich is now at 55.

Quotations for August 21 are as follows:

	Bid	Asked
Amer. R & T com	...	80
Amazon Rubber	...	90
Firestone T & R com	115	117
do 6 pct. pfd.	93	96
do 7 pct. pfd.	85	86
General T & R com	...	700
do 7 pct. pfd.	92	94
B F Goodrich com	55	57
do 7 pct. pfd.	84½	86
do 5 yr. 7 pct. notes	90	92
Goodyear T & R com	110	112
do pfd.	84½	85½
India Rubber com	...	160
do 7 pct. pfd.	...	80
Mason T & R com	17	20
do 7 pct. pfd.	68	75
Marathon T & R com	45	50
Miller Rubber com	115	125
Mohawk Rubber	...	285
Portage Rubber com	50	60
do 7 pct. pfd.	...	60
Republic Rubber com	1¼	2
do 7 pct. pfd.	...	40
do 8 pct. pfd.	20	25
Rubber Products	...	100
Star Rubber com	...	150
do 8 pct. pfd.	...	100
Swinehart T & R com	...	75
do 7 pct. pfd.	...	80
Phoenix com	...	20
do pfd.	...	90
Standard Tire com	...	175
do pfd.	...	90

American Rubber Patents

ISSUED JULY 27, 1920

1,347,585—To Frederick A. Mackert and Louis E. Bock, Philadelphia, Pa. Resilient, non-puncturable and demountable tire.

1,347,650—To Clifford C. Mosher, Lima, Ohio. Rubber-cement-mixing machine.

1,347,679—To Egbert R. Brown, Los Angeles, Calif., assignor to O. W. Fort and H. R. Taylor, Los Angeles, Calif. Vehicle-tire.

1,347,775—To Harry M. Burr, Middletown and George J. Ingraham, West Hartford, Conn., assignors to the Omo Mfg. Co., Middletown, Conn. Insulating waterproof sole for use on boots and shoes.

1,347,800—To Paul E. Wirt, Bloomsburg, Pa. Fountain pen.

1,347,847—To Hans E. Graban, Long Island City, and A. Charles Schwartz, New York, N. Y. Tire-casing.

1,347,848—To Hans E. Graban, Long Island City, and A. Charles Schwartz, New York, N. Y. Tire-casing fabric and method of making the same.

1,347,950—To George Hofmann, Chicago, Ill., assignor to Hofmann-Morgan Rubber Company, Chicago, Ill. Pneumatic tire.

1,348,953—To James A. Horne, Newark, N. J. Resilient tire.

1,348,105—To George Madison Goudy, Goshen, Ind. Cushion-tire.

1,348,111—To Eugene S. Hayford, New Orleans, La. Pneumatic-tire inflater.

ISSUED AUGUST 3, 1920

1,348,163—To George Ferguson, Wollaston, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J. Rubber-sole heel.

1,48,165—To Franklin A. Frommann, Chicago, Ill. Vehicle-wheel.

1,348,200—To William Worby Beaumont, Westminster, London, England. Manufacture of tires for wheels of road-vehicles.

1,348,211—To Alonzo Townsend Cross, Providence, R. I. Fountain-pen filling device.

1,348,228—To Joseph Ledwinka, Pholadelphia, Pa., assignor to Edward G. Budd Manufacturing Co., Philadelphia, Pa. Method of and means for vulcanizing rubber tires.

1,348,522—To Martin O. Sweiven, Olivia, Minn. Spring-tire.

1,348,612—To Glenn Harlan Willis, Akron, Ohio, assignor to the Miller Rubber Company, Akron, Ohio. Separable core.

1,348,614—To Leander W. Wood, Fontanelle, Iowa. Tire.

1,348,706—To John B. Frechette, Valpariso, Ind. Flexible and resilient shoe-sole.

1,348,714—To Thomas Gordon, Vancouver, British Columbia, Canada. Tire.

Condition of Cotton Improves

The folowing article upon the condition of cotton appeared in a recent issue of the Journal of Commerce:

The percentage condition of cotton for the month of July shows an estimated gain of 3.3 per cent to 74.8 per cent. This compares with 71.5 per cent in June and 77.2 per cent the ten-year average, and represents the opinions of approximately 1,800 special correspondents of The Journal of Commerce under an average date of July 23. It is of interest to note that the increase above noted is the first for the month of July since 1917, at which time an advance of 1.6 was reported, and is by far the largest gain for this season of any year since 1911. Last year there was a decline of 1.3. In 1918 the loss aggregated 5.7 points. A year ago condition was placed at 70.1, in 1918 at 77.4 and in 1917 at 73.3. Following the Government's method of calculation, the estimated yield this year will be 12,953,000 bales, excluding linters, which compares with an actual yield in 1919 of 11,329,755 bales.

Among the most important gains by States responsible for this improvement were Florida, which led with an advance of 12.3 points. Missouri followed with a condition of 82.7, against 75.0,or a gain of 7.7, while Oklahoma advanced 5.9, or from 76.1 to 82.0. Tennessee gained 4.6, Georgia 5.3, Alabama 3.6 and Texas 3.3. As a matter of fact all of the cotton States recorded increases with the sole exception of Louisiana, which declined from 7.5 last month to 72.4, a loss of 3.1 points.

Reports from nearly all parts of the cotton producing area, particularly in the western and central portions of the belt, show that the cotton crop has made most satisfactory progress during the past month. The widespread improvement noted in weather conditions has done much to make up for time lost earlier in the year, and although the crop is still unusually backward—it is variously estimated as from two to four weeks late—the plant, while small, is said to be uniformly healthy and fruiting well. One result of this backwardness is that though weevils are reported as alarmingly numerous in the infested regions, damage to cotton is thus far comparatively light for this time of year. It, however, leaves a factor of rather formidable proportions to be reckoned with as the crop develops to maturity, and one which promises to become still more menacing should the persistent rains of the past ten days or more continue much longer. This handicap has been most pronounced in Louisiana, where the almost incessant rains have already injured the crop, also in Mississippi, North Carolina and parts of Texas, and means not only the liklihood of an increase in weevil depredations but a too rapid growth, grassy fields and in some cases heavy shedding and blight. The lowlands, of course, have suffered most severely, some bottom crops showing heavy losses. In the uplands, however, cotton for the most part is said to be looking fine.

When considered together with the abnormally late start and exceedingly unfavorable conditions prevailing during the spring months, the present outlook must be regarded as most encouraging, but it should nevertheless be kept in mind that the crop has still to pass through August, invariably a critical month, when continuous rain or a protracted period of drouth or excessively high temperatures might cause very serious deterioration. Furthermore, many correspondents are of opinion that the comparatively light amount of weevil thus far reported is almost wholly due to the backward condition of the crop, and unless almost ideal weather is had next month heavy losses in the final yields may be looked for from this source.

Percentage condition by States, with comparisons, follows:—

	—1920—			—August—	
	Aug.	July.	Diff.	1919.	1918.
N. Caroline	75.0	73.9	+ 1.1	78.4	84.7
S. Carolina	75.8	74.0	+ 1.8	72.8	82.0
Georgia	71.2	65.9	+ 5.3	72.5	79.2
Florida	68.3	56.0	+12.3	61.8	70.7
Alabama	71.2	67.6	+ 3.6	67.2	79.6
Mississippi	71.6	69.9	+ 1.7	66.1	82.2
Louisiana	72.4	75.5	— 3.1	59.2	75.2
Texas	75.8	72.5	+ 3.3	70.7	70.3
Arkansas	77.0	74.1	+ 2.9	65.8	81.0
Tennessee	77.0	72.4	+ 4.6	70.5	87.2
Missouri	82.7	75.0	+ 7.7	70.8	85.0
Oklahoma	82.0	76.1	+ 5.9	74.0	81.7
Average	74.8	71.5	+ 3.3	70.1	77.4

Government estimates of acreage and yield, together with the percentage condition for July during the past ten years, as compiled by this journal, are given below for comparison:

	Bales.	Acreage Planted.	Condition.
1920		35,594,000	74.8
1919	11,329,755	35,133,000	70.1
1918	12,040,532	37,073,000	77.4
1917	11,302,375	34,925,000	73.3
1916	11,449,930	35,994,000	74.4
1915	11,191,820	32,107,000	77.3
1914	16,134,930	37,406,000	78.8
1913	14,156,486	37,458,000	81.1
1912	13,703,421	34,776,000	77.5
1911	15,692,701	36,681,000	86.9

The July and August reports for the past ten years, together with the increases or declines during July, are given in the following table:

	1920.	1919.	1918.	1917.	1916.
August	74.8	70.1	77.4	73.3	74.4
July	71.5	71.4	83.1	71.7	78.6
	+3.3	—1.3	—5.7	+1.6	—4.2
	1915.	1914.	1913.	1912.	1911.
August	77.3	78.8	81.1	77.5	86.9
July	79.7	78.6	80.9	81.3	85.9
	—2.4	+0.2	+0.2	—3.8	+1.0

No French Auto Show This Year

By decision of the committee of organization, the French automobile exposition of this year has been cancelled. It was to have been held at the Grand Palais in October. There is a difference of opinion among the automobile manufacturers and dealers on the wisdom of this decision. Some of them are of the opinion that French automobile interests will suffer, and that an advantage will accrue to British interests, as the British show will be held in November as usual.

At the same time it has been decided by the manufacturers interested not to hold an aviation exposition this year in Paris.

Rubber Imports for July

Figures recently compiled by the Rubber Association of America, Inc., showing the importations of crude rubber into the United States during the month of July are as follows:

PLANTATIONS

From	Tons
Liverpool	127
Rotterdam	123
London	721
Christiana	1
Aden	24
Singapore	5,914
Kobe	31
Colombo	2,005
Deli-Belawan	386
Malacca	10
Batavia	1,344
Cochin	53
Medan	75
Sourabaya	1,030
Penang	2,203
Pt. Swettenham	301
Pt. Dickson	5
Japan and others	342
	14,695

AFRICANS

From	Tons
Bordeaux	11
Liverpool	19
Beira and African Ports	4
	34

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	49
Guayule (Mexico)	—
	49

PARAS

Manaos	777
Para	208
Bahia	5
Montevideo	5
Iquitos	120
	1,115

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	Tons
Waste	312
Balata	8
Miscellaneous Gums	1283

COMPARISON 1919—1920

	JULY 1919	JULY 1920	Total importations 7 months ending, JULY 31st 1919	1920
Plantations	17,645	14,695	113,489	149,098
Paras	121	1,115	14,043	13,924
Africans	16	34	1,587	3,644
Centrals	82	40	1,011	590
Guayule	101	—	1,401	504
Manicoba and Matta Grosso	—	—	163	13
	17,965	15,884	131,694	167,773

ARRIVALS PLANTATIONS FOR JULY, 1920, SHOWING PORTS OF ORIGIN AND ARRIVAL

From	Arrived at	Tons
Singapore	New York	5,453
Singapore	San Francisco	281
Singapore	Vancouver	180
Penang	New York	2,203
Batavia	San Francisco	203
Batavia	New York	1,141
Sourabaya	San Francisco	195
Sourabaya	New York	835
Japan and others	Vancouver	203
Japan and others	Seattle	34
Japan and others	New York	105
Aden	New York	24
Christiana	New York	1
Port Dickson	New York	5
Colombo	New York	2,005
Medan	New York	75
Cochin	New York	53
Malacca	New York	10
Kobe	New York	31
Deli-Belawan	New York	372
Deli-Belawan	San Francisco	14
London	New York	721
Liverpool	New York	127
Port Swettenham	New York	301
Rotterdam	New York	123
		14,695

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports:		
New York		13,585
Pacific Ports:		
San Francisco	693	
Seattle	34	
Vancouver	383	
		1,110
		14,695

Mid-West Rubber Manufacturers' Association Holds Annual Outing

About Sixty-five Members Hold Outing at Cedar Point—Features were the Swimming Races, Fat Man's Race, Wheelbarrow Race and the Fifty Yard Dash.

The August meeting of the Mid-West Rubber Manufacturers' Association took the form of an outing, which was held at the Hotel Breakers, Cedar Point, near Sandusky, Ohio, August 16 and 17, and attended by about sixty-five members of the Association and their guests.

An enjoyable dinner was held in the hotel pavillion on Monday evening and on Tuesday morning there were beach sports.

The swimming race was won by O. M. Ragedale of the Hunter Dry Kiln Company, the prize being a golf bag.

The fat man's race was won by E. S. Babcox of the Akron Advertising Agency, the prize being a silver pen and pencil.

The wheelbarrow race was won by K. Hassenzahl, Akron representative of Gove and French and by Mr. Rodenbough, Akron representative of F. R. Henderson and Company, the prize being a pin seal bill-fold to each winner.

The fifty yard dash was won by Mr. O'Reardon of "Tires," New York, the prize being a silk umbrella.

Luncheon was held immediately after the sports, after which there was held a brief business session, presided over by Theodore E. Smith, of the India Rubber Review, Akron, Ohio, who addressed the meeting on present conditions in the trade.

Jesse E. LaDow, secretary of the Mansfield Tire and Rubber Company, Mansfield, Ohio, gave an interesting account of his travels through the countries of crude rubber production in the Far East.

E. S. Babcox of Akron, said that while present dull conditions in the tire trade had seemed inevitable, he believed that better business was in store for the trade this coming winter.

Some interesting remarks were also made by J. E. Allen of the Braender Rubber and Tire Company of Rutherford, N. J., Mr. O'Reardon of "Tires", Mr. Ragedale of the Hunter Dry Kiln Company and by W. F. Harrah of the National-Standard Company, Niles, Michigan.

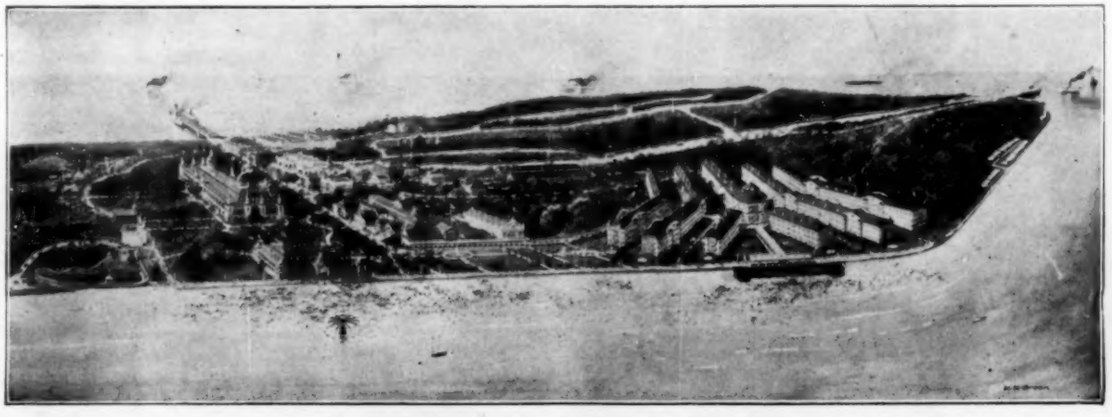
A vote of thanks was then passed to the Outing Committee consisting of the following: H. S. Vorhis, chairman; E. T. Meyer, Paul A. Bloom, C. H. Taveniere and J. Matthias, Jr.

The following were present:—

H. M. Dannenbaus—The Schwarzwoelder Company, Philadelphia, Pa.
W. F. Harrah—The National-Standard Company, Niels, Michigan.
E. J. Small, Jr.—National Aniline and Chemical Company, Akron, O.
Julius Tumpeer—Wishnick-Tumpeer Chemical Company, Akron, O.
F. A. Bonstedt—Duffy and Sears, Chicago, Ill.
Theodore E. Smith—India Rubber Review, Akron, O.
L. E. Wemph—American Zinc, Lead and Smelting Company, Chicago, Ill.
A. C. Eide—American Zinc, Lead and Smelting Company, Chicago, Ill.
K. Hassenzahl—Cove and French, Akron, O.
E. S. Babcox—Akron Advertising Agency Company, Akron, O.
W. E. Wilson, Akron Rubber Mold and Machine Co., Akron, O.
Paul A. Bloom—Fred Stern and Company, Chicago, Ill.
M. E. Daniels, Bankers' Audit and Appraisal Company, Chicago, Ill.
L. V. Keeler—J. Frank Dunbar Company, New York.
J. W. Oliver—Rogers-Pyatt Shellac Company, New York.
R. B. McCreary—The H. J. Adams Company, Akron, O.
F. A. Pope—Cleveland Mixer and Manufacturing Company, Cleveland, O.
J. S. Benner—Electric Rubber Reclaiming Company, Barberton, O.
Wm. T. White—J. Spencer Turner Company, New York.
H. W. Holcombe—Rubber Importers' and Traders' Company, New York.
LeRoy Wood—Rubber Importers' and Traders' Company, New York.
M. Millienthal—Ed. Maurer Company, Incorporated, New York.
R. D. Ford—Rotary Tire and Rubber Company, Zanesville, O.
W. F. Hendrich—Rotary Tire and Rubber Company, Zanesville, O.
Bernard L. Green—Osborn Engineering Company, Cleveland, O.
P. P. Evans—Osborn Engineering Company, Cleveland, O.
S. L. Smith—W. R. Grace and Company, New York.
Jesse E. LaDow—Mansfield Tire and Rubber Company, Mansfield, O.
P. M. Ober—Mansfield Tire and Rubber Company, Mansfield, O.
Chas. Hoffman—Mansfield Tire and Rubber Company, Mansfield, O.
Clinton H. Taveniere—Chas. E. Wood, Chicago, Ill.
J. Rodenbough—F. R. Henderson and Company, Akron, O.
E. T. Meyer—F. R. Henderson and Company, Chicago, Ill.
P. P. Parker—Parker Tire and Rubber Company, Indianapolis, Ind.
H. B. Bixler—H. B. Bixler Company, Akron, O.
D. L. Spraker—Kokomo Rubber Company, Kokomo, Indiana.
W. E. Wrisberg—Newsom Valve Company, St. Louis, Mo.
Carl Pharis—Pharis Tire and Rubber Company, Newark, O.
Jay E. Deetz—Carey Tire and Rubber Company, Carey, O.
Fred J. Quirk—Carey Tire and Rubber Company, Carey, O.
Wm. Campbell—Carey Tire and Rubber Company, Carey, O.
J. Mathias, Jr.—Mineral Point Zinc Company, Chicago, Ill.
C. F. Beatty—New Jersey Zinc Company.
Geo. F. Kline—Monarch Rubber Co., Hartville, O.
B. F. Franz—Knox Tire and Rubber Company, Akron, O.
E. Scott Cannell—Knox Tire and Rubber Company, Akron, O.
Vern Henershot—Knox Tire and Rubber Company, Akron, O.
J. A. Kendall—Knox Tire and Rubber Company, Akron, O.
J. E. Allen—Braender Rubber and Tire Company, Rutherford, N. J.
P. F. Wills—Erie Tire and Rubber Company, Sandusky, O.
A. K. Murray—Tire Rate Book, New York.
H. O'Reardon—"Tires", New York.
O. M. Ragadale—Hunter Dry Kiln Company, Indianapolis, Ind.
W. H. Owens—Great Republic Tire and Rubber Mfg. Co., Muskogee, Okla.
E. C. Marianelli—Great Republic Tire and Rubber Mfg. Co., Muskogee, Okla.
Edgar S. Ludlow—Chisholm and Moore Mfg. Co., Cleveland, Ohio.
M. Barbannell—New York.
W. H. Hermann—Hermann Tire Building Machine Co., Lancaster, Ohio.
Paul Maurer—Ed. Maurer Co., Inc., New York.
G. W. Hall—Keystone Lubricating Company.
H. W. Allen—Keystone Lubricating Company.
F. C. Rudisell—Overland Tire and Rubber Company, Omaha, Nebr.
H. J. Adams—The H. J. Adams Co., Akron, O.
W. H. Stillwell—Allen Machine Co., Erie Pa.
L. E. Wemple—American Zinc, Lead and Smelting Co., St. Louis.
H. S. Vorhis—General Manager, Mid-West Rubber Manufacturers Association.

French Factories for Sale

Word has been received from "Le Cnoutchouc et La Gutta-Percha", 49 Rue des Vinaigriers, Paris, France, to the effect that there are a number of rubber factories for sale in Paris and the surrounding districts. These plants are in full operation and in view of the low rate of exchange now in effect would prove a profitable investment for any one who may be interested. Further particulars may be had by writing to the above address.



General View of Cedar Point on Lake Erie

MARKETS

Manufactured Rubber Goods

AUGUST 20, 1920.

Rubber manufacturers have been hard hit in many instances by the shortage of freight cars, and practically the entire industry has been slowed down to some extent by the general business conditions now prevailing. Buying has let up in many branches, and with large stocks on hand, some of the manufacturers are finding themselves in a cramped situation. The established companies are able to weather the storm much better than the recently formed ones, as these late comers in the industry have not as yet established a steady line of credit with their banks, and the latter are showing themselves to be extremely reluctant in the matter of making loans on merchandise.

This unsettled condition has communicated itself to the markets for raw materials, and falling markets have been the general result in lines directly affected by the rubber goods situation.

EXPORTS

A little export business has been booked with Great Britain, but exporters are going slow about making shipments to other countries. With all Poland and Russia in arms and other countries showing signs of becoming embroiled, war risk insurance on goods sent to foreign markets and held is going up rapidly, and rubber goods dealers are taking no chances in making shipments unless they know just where and how the goods are going.

AUTOMOBILE TIRES

Although the tire industry as a whole held closely to its scheduled production of 40,000,000 automobile tires for the year 1920 during the first half of the year, it s doubtful if it can keep up production at a pace sufficient to bring the total up to the planned forty million by the end of the year. Tire manufacturers in all parts of the country are curtailing work and laying off hands, and no sign of immediate improvement is to be seen. Many factories are choked up with manufactured tires which cannot be distributed owing to light demand and the wheels of production have become clogged.

BOOTS AND SHOES

Manufacturers of rubber-soled shoes are being offered large stocks of tire fabrics which have been rejected by tire manufacturers due to the inability of the latter to operate, and it is understood that the goods have been offered at considerable reductions. The latter are not taking hold much, however, due to the higher prices asked for the fabric than for the usual shoe ducks, which are generally selling below the dollar mark.

Rubber shoe manufacturers have enjoyed a good season this year. The high cost of leather shoes served to bring still more popularity to the rubber footgear, and sales increased. The workshoes put out by the various manufacturers are finding more and more popularity each season. Boot manufacturers are looking for a good season this year, as much of the Government competition has been removed with the clearing of the huge surplus stocks of the army and navy.

Rubber heel demand is outstripping production on the more popular makes, and even the makers of the unknown, or unadvertised brands, report business so brisk that they are constantly expanding their operations.

MECHANICAL GOODS

A quiet market for rubber packing has been reported in the local market. With industrial operations slowed down in all parts of the country, requirements for packing have been reduced, and the market is now in routine condition.

Business in rubber belting has also been quiet. With the leather market rapidly decreasing, manufacturers of the rubber products are coming in for more competition from the leather belting manufacturers.

Cottons, Yarns and Fabrics

NEW YORK, AUGUST, 21, 1920.

Continued depression rules in the market for raw cotton, and the market has been engulfed in a slump which has carried prices lower and lower from day to day. New low levels were made in all options at the close of trading yesterday, after the market had broken badly on a veritable wave of liquidation.

The increased selling has been brought on by a number of factors. Mills have found themselves long on the market as the result of reduced operations, and have been clearing some of their surplus contracts. Cotton yarn spinners have found themselves in much the same predicament, and have been unloading steadily. The most significant feature of the entire selling, in the opinion of well posted market men, is the heavy burst of selling from Southern points. If the Southerners have no faith in the value of their own staple product, market men believe that there is good ground for expectations of lower prices.

Bull interests which a few short months ago were talking of 60 cent cotton during the coming season, have now executed a right about movement and are now talking of "20 cent cotton." With the cotton mills operating on a very curtailed basis, with demand for lower prices insistent, and with prices on other commodities falling in conformity with this insistence, there seems to be no plausible reason for the maintenance of cotton at its present high levels, and unless some radical change should occur, a steadily declining market from now on is apparently in order.

EGYPTIAN COTTON

A good crop of Sea Island cotton is looked for during the coming season, as the British government is doing everything possible to stimulate the growing of cotton in her colonies and possessions. Efforts to have the cotton acreage reduced to make room for the growing of more foodstuffs have apparently failed. Spinners of tire fabrics are not showing much interest in the Egyptian market at the present time, due to dull demand for fabrics.

Crop conditions in Arizona are not so favorable this year as last, the condition of the crop at the last report being only 85 per cent, as compared with 93 per cent last year, and 95 per cent the year previous. The largely increased acreage this year, however, will make for a record crop and preclude the possibility of any serious shortage on this long staple variety. The crop of long staple in California is in about the same condition as the Arizona crop.

SEA ISLAND COTTON

The Sea Island industry continues to dwindle, the entire amount ginned for the past season being less than 7,000 bales. The commercial crop totaled about 20,000 bales, but this increase was accounted for in the large carry-over from previous crop years. Spinners are paying much attention to the Sea Island cotton situation, however, and it is possible that this variety may be entirely eliminated from the market during the next few years if the industry continues to go backwards as it has for the past few years. The Sea

Island growers have waged a losing fight against the boll weevil and are apparently about ready to give up.

TIRE FABRICS

With many of the tire factories working on part time, the distribution of tire fabrics is necessarily limited, and spinners are not able to find a market for their goods, many consumers having cancelled orders. The spinners are laying off help and shutting down, to preclude the possibility of overproduction. The larger manufacturers have enough fabrics on hand to take care of their business during present limited operations and are not in the market.

DRILLS, SHEETINGS AND OSNABURGS

Heavy offerings of sheetings continue to depress the market and prices are quoted lower all along the line. Buyers are not in the market for large quantities, but are operating on a hand to mouth basis and confining their purchases to actual needs. The market for drills is on an uncertain basis, prices varying with different sellers. The entire undertone, however, is one of weakness.

HOSE AND BELTING FABRICS

More easiness has developed in this branch of the fabrics market, and prices are off all along the line under light buying. Hose and belting ducks are quoted considerably lower at 73 to 75 cents per pound, while the market on enameling is also down at 80 to 85 cents per pound, a drop of 10 cents per pound on the outside price. Shoe ducks are lower at 90 cents, a decline of 8 cents per pound.

TIRE FABRICS

17¼-ounce Sea Island, combed, sq. yd.	Nominal
17¼-ounce Egyptian, combed	2.35@2.50
17¼-ounce Egyptian, carded	2.25@2.40
17¼-ounce Peelers, carded	Nominal
17¼-ounce Peelers, combed	2.25@2.35

DUCKS

Belting (pound basis)	lb.	.73 @	.75
Hose (pound basis		.73 @	.75
*Enameling		.80 @	.85
Shoe Ducks		.90 @	—
Single filing	yd.	.30 @	.32
Double filing		.36 @	—

*Price varies according to width.

DRILLS

37-inch 2.35-yard	yd.	.27 @	—
37-inch 2.75 yard		.21 @	.22
37-inch 3.00 yard		.20 @	.21
37-inch 3.25-yard		.19 @	.20
37-inch 3.50-yard		.17½ @	.18½
37-inch 3.95-yard		.15½ @	.16
37-inch 2.00-yard	Southern	Nominal	
37-inch 2.00-yard	Northern	Nominal	
40-inch 2.40-yard	Southern	Nominal	
40-inch 2.40-yard	Northern	Nominal	
52-inch 1.90-yard	Southern	Nominal	
52-inch 1.90-yard	Northern	Nominal	

SHEETINGS

40-inch 2.35-yard	yd.	Nominal	
40-inch 2.50-yard		.24 @	—
40-inch 2.85-yard		.20 @	—
40-inch 3.00-yard		— @	—
40-inch 3.25-yard		Nominal	
40-inch 3.75-yard		.18½ @	.19½
40-inch 4.25-yard		.16 @	.17

Note—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS
(Carload Lots)

	Cents	Per	Yard
7 -ounce 40-inch	—	@	—
7½-ounce 40-inch	9.90	@	—
7½-ounce 45-inch	—	@	—
8 -ounce 40-inch	8.15	@	8.15
8½-ounce 40-inch	10.75	@	—
10 -ounce 36-inch	10.75	@	—
10 -ounce 40-inch	10.75	@	—
10 -ounce 45-inch	Nominal		
10½-ounce 40-inch	11.00	@	—

* And higher, according to width.

Chemicals and Compounding Materials

NEW YORK, AUGUST 20, 1920.

With consumption easing off on many lines the market is showing an easier undertone, and numerous price declines have been reported during the past fortnight. Producers of some lines, however, who have oversold in the past, are still keeping the market firm in their particular branch having orders for months ahead yet, and being in a position to show strong views on the market.

The question of freight rate advances is receiving some consideration from consumers, and some orders have been rushed through during the past few weeks for prompt shipment, buyers hoping to avoid increased freight rates by prompt buying.

IMPORTS AND EXPORTS

Export buying is generally very light, foreign consumers being in no condition to finance imports of chemicals or compounding materials from the United States.

The import situation, however, is showing more life, and frequent arrivals of foreign goods are to be noted. Germany is shipping crude barytes here and these supplies are in some measure helping to relieve the shortage of this material. Some lithopone is also being brought in from Belgium, but this is going directly into consumption, and is not being offered in the open market.

LITHARGE

An active demand for litharge is reported, and the market is being strongly maintained by leading producers. There is a good deal of future business offering by consumers who cannot get prompt shipment of litharge from manufacturers. American powdered in casks holds steady

LITHOPONE

Demand for this product is still keeping well ahead of available supplies, and domestic producers are bending every energy towards developing more production. The increased freight rates to go into effect the latter part of this month will increase producing costs of lithopone, and although manufacturers are now figuring on this advanced cost, they have not as yet given any indication as to whether or not they will raise their prices and are holding the market firm at 8 @ 8½ cents per pound.

WHITING

This market is on a parallel with that ruling on lithopone, and with whiting producers the big question is one of getting the goods, rather than that of getting the business. Many producers are still far behind in their deliveries, and have had no opportunity to create reserve stocks.

BARYTES

An active market for crude barytes is reported, and with demand far exceeding production, there is a merry scramble on the part of consumers to get supplies. Imports have not yet become large enough to afford any relief, and new sources of production are being sought.

DRY COLORS

Trading has been rather quiet in this branch of the market, but prices on the whole have been sustained. There is a little recession in inside quotations on lampblack and carbon gas, but this weakness has not communicated itself to other branches of the market.

ZINC OXIDE

Some light imports of zinc oxide have been made during the past few weeks, but the quantity has not been large enough to affect the domestic market, which is strongly held in all quarters. Producers are working at capacity whenever possible, to catch up with back orders.

BENZOL AND OTHER CRUDES

There is a steady market for benzol ruling, and the producers' prices of 33 cents per gallon for the 90 per cent pure, and 35 cents for the pure remain unchanged. Napthalene is held at 21 to 24 cents per pound in second hands. Toluol is firm at 35 cents per gallon under a heavy demand. Xylol is held at 30 cents per gallon in tanks for commercial, while in drums the market price is 45½ cents per gallon.

Current Prices for Chemicals, Fillers, Colors, etc.

Acetone, carlots	lb.	.21 @	.22
smaller lots	lb.	.22 @	.23
Acetanilid, C. P., bbls.	lb.	.58 @	.65
Acids, Acetic, 56 per ct.	cwt.	8.40 @	9.15
Carbolic, C. P.	lb.	.12 @	.20
Muriatic, 20 deg.	cwt.	2.25 @	2.50
Muriatic, 22 deg.	cwt.	3.00 @	3.25
Nitric, 42 deg.	cwt.	8.00 @	8.25
Nitric, 40 deg.	cwt.	7.25 @	7.75
Sulphuric, 60 deg. car lots	tons	17.00 @	19.00
Sulphuric, 60 deg. car boys		19.00 @	21.00
Tartaric, crystals	lb.	.76½ @	.77
Aluminum, Silicate		Nominal	
Aniline oil, bulk basis, Contract		— @	—
Imported		Nominal	
Domestic		.28 @	.30
Antimony— Oxide	lb.	.14 @	.15
Sulphuret, red	lb.	.22 @	.25
Sulphuret, golden	lb.	.28 @	.30
Sulphuret, crimson	lb.	.45 @	.50
Alcohol, denatured, 190 proof		1.00 @	1.04
Wood, 95 per cent		3.25 @	3.30
Ethyl, 190 proof		Nominal	
Aldehyde Ammonia		Nominal	
Ammonia, powdered		.17 @	.17½
Ammonium Carbonate, domestic	lb.	.16 @	.16½
Amyl Acetate	gal.	4.10 @	4.15
Anthracene, 80 per cent		1.00 @	1.10
Anthroquinine, 95 per ct.		3.75 @	4.25
Asbestine		Nominal	
Asphaltum, Egyptian	lb.	.20 @	.25
Domestic	ton	.30 @	.40
Barium, dust		— @	—
Sulphide	lb.	— @	—
Barytes, prime white imported	ton	Nominal	
white, domestic	ton	35.00 @	40.00
off-color, domestic	lb.	20.00 @	30.00
Southern, f. o. b. mills		23.50 @	25.00
Western, f.o.b. mille		23.50 @	26.00
Beeswax		.24 @	.65
Benzidine Base	lb.	1.30 @	1.35
Benzol, 90 per ct.	gal.	.33 @	.38½
Benzol, pure bulk, 100		.35 @	.40½
Blanc Fixe, dry, bbls.	lb.	.06 @	—
Burgundy Pitch, dom.	lb.	.08 @	.10
Foreign		.60 @	.65
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.30
Lampblack R M.	lb.	.12 @	.40
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian		.95 @	1.00
Soluble	lb.	1.00 @	1.05
Ultramarine	lb.	.15 @	.50

Browns, Umber, Turkey, burnt powdered	lb.	.05½ @	.07
American, burnt	lb.	.04½ @	.06
Cadmium, sulphide, yellow	lb.	1.75 @	2.00
Carbon Disulphide, bulk	lb.	— @	—
Bisulphide	lb.	.07½ @	.08
Casein, C. P.	lb.	.35 @	.36
Castor Oil		.16½ @	.19
Caustic Soda, 76 per ct.	cwt.	5.75 @	6.00
Chalk, precipitated, extra light	lb.	.05½ @	.06
heavy	lb.	.04½ @	.05
China clay, domestic	ton	10. @	20.00
imported	ton	19.00 @	25.00
China Wood Oil, bbls.	lb.	.17½ @	—
F.o.b. Pacific Coast		.16½ @	—
Chloroform, U. S. P.		.40 @	.45
Coal Tar Pitch		— @	—
Cottonseed Oil, crude f.o.b. mills	lb.	10.00 @	—
Prime summer yellow	bbls.	11.50 @	13.00
Dimethylaniline	lb.	1.30 @	1.45
Elateron		— @	—
Formaldehyde, spot	lb.	.50 @	.51
Fullers Earth, powd., carload lots		17.00 @	—
Fossil flour	lb.	.03¾ @	.05
Genasco Mineral Rubber		— @	—
Gilsonite	ton	55.00 @	65.00
Glue, extra white	lb.	.35 @	.45
medium	lb.	.30 @	.35
low grade		.22 @	.26
foot stock		.19 @	.22
brown foots		.19 @	.22
common bone		.18 @	.21
Glycerine, C. P. (drums)	lb.	.28½ @	.29
cans		.29½ @	.30
Graphite, flake (bbl.)	lb.	.14 @	.20
powdered (bbl.)	lb.	.05 @	.10
Green, chrome, R. M.	lb.	.42 @	.70
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	1.95 @	—
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.13 @	.15
red, pure, bright	lb.	— @	—
Hexamethyenetetramine	lb.	2.83 @	—
Kaolin		— @	—
Lime, hydrated		— @	—
Lead, red, dry (casks)	lb.	.12¼ @	.12½
sublimed	lb.	— @	—
white, basic carb.	lb.	.10½ @	.11
white, basic sulp.	lb.	.10 @	.10¼
Lime flour	lb.	— @	—
Litharge (casks)	lb.	.11¾ @	.12¼
English	lb.	— @	—
Lithopone, domestic, bbls.	lbs	.08 @	.08¼
in bags	lb.	.07¾ @	—
M. R. X.		— @	—
Magnesia, carbonate	lb.	.18 @	.19
calcined light	lb.	.60 @	.65
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Magnesia Oxide, heavy		— @	—
Light		— @	—
Extra light		— @	—
Napthalene	lb.	.21 @	.22½
Nirobenzol		.15 @	.16½
Naphtha, motor gasoline, (steel bbls.)	gal.	.30 @	—
68 @ 70 degrees (steel bbls.)	gal.	.37 @	—
70 @ 72 degrees (steel bbls.)	gal.	.38 @	—
73 @ 76 degrees (steel bbls.)	gal.	.40 @	—
machine (steel bbls.)	gal.	.49 @	—
Oil corn, crude factory	cwt.	11.06 @	—
corn, ref. (bbls.)	cwt.	16.06 @	—
linseed, (bbls.)		1.48 @	—
In carloads, spot		1.45 @	—
tank cars		1.38 @	—
Oil palm, Lagos	lb.	.10 @	—
Niger		.09 @	—
pine, yellow	gal.	1.00 @	—
distilled	gal.	1.25 @	1.35
rapseed, refined	gal.	1.50 @	—
rapseed, blown	gal.	1.55 @	—
rosin, first rectified	gal.	.74 @	—
second run		.77 @	—
tar (commercial)	gal.	.38 @	.40
Oleum Acid, 20 per ct.	ton	28.00 @	30.00
Orange mineral, Amer.	lb.	.15½ @	.16½
imported	lb.	Nominal	
Ozokerite		Nominal	
Paraphenylenediamine	lb.	2.70 @	2.85
Petrolatum, bbls., amber	lb.	.06 @	.07
pale yellow	lb.	.06½ @	.07
Paranitrosodimethylanaline		— @	—
Parafin, refined, 118 @ 120 m. p.		.12 @	—
127 @ 129 m. p.		.11 @	—
137 @ 140 m. p.		.12½ @	—
Phenol		.12 @	.16½
Pumis		.05 @	.10
Pine tar kiln	bbl.	15.00 @	—
Pitch	bbl.	10.50 @	—
Plaster of paris	bbl.	4.25 @	5.00
Red Tuscan	lb.	.22 @	.30
red (American)	lb.	.15 @	.16
Indian (English)		.15 @	.16
Standard	lb.	— @	—
Rosin (common to good)—280 lbs.		14.00 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Rosin Oil, first rectified		.74 @	—
Second rectified		.77 @	—
Third rectified		.93 @	—
Fourth rectified		1.03 @	—
Soda ash, light, 58 pct.	cwt.	3.25 @	3.45
Sodium Nitrite 96@98 pct.		.16 @	.17½
Solvent Naptha, crude, hvy.		.30 @	.35½
Soya Bean Oil, bbls.	lb.	.14 @	—
Sellers, tanks, f. o. b. Coast		.09½ @	.10
Stearic Acid, single		.21½ @	—
Shellac, fine orange	lb.	Nominal	
Sulphur Chloride, drums		.06½ @	.16
T. N.	lb.	1.15 @	1.20
Bleached, ordinary	lb.	1.05 @	1.15
Bleached, bonedry	lb.	1.30 @	1.40
Silex (silicia)	ton	25.00 @	40.00
Soapstone, powdered	ton	15.00 @	20.00
Starch, corn, powd.	cwt.	5.12 @	—
pearl		4.97 @	—
Jap potato, duty pd,	lb.	.06½ @	.07
Sulphur, crude	ton	— @	—
100 pounds		— @	—
roll		3.45 @	—
commercial superfine		2.10 @	2.35
Talc, American	ton	18.00 @	20.00
French	ton	30.00 @	—
Thiocarbanilid		— @	—
Toluol, pure, in drums	gal.	.35 @	.40½
commercial		.30 @	.32
Tripolite earth	lb.	.01½ @	—
Turpentine, pure gum—spirit	gal.	1.65 @	—
wood	gal.	1.62 @	—
Venice, artificial	gal.	.15 @	.16
true		3.25 @	3.30
Vermilion, English	lb.	1.60 @	—
American		.25 @	.30
Vorite		Nominal	
Wax, beeswax, crude yel.	lb.	.24 @	.26
refined		.33 @	.50
Bayberry		.37 @	.39
ceresin, white	lb.	.15 @	.16
yellow		.14 @	.15
Whiting, commercial	cwt.	1.40 @	—
Gilders Bolted		1.45 @	—
Paris white, Amer.	cwt.	1.75 @	—
English cliffstone	cwt.	2.00 @	—
Xylol (gal.) pure		.45 @	.50½
Commercial		.30 @	.30½
Zinc Oxide, French process, red seal		.11½ @	.11¾
green seal		.12½ @	.12¾
white seal		.13½ @	.13¾
Leaded Grades— Commercial, lead free		.09½ @	.10
5 per ct. lead sulphate		.09 @	.09½
10 per ct. lead sulphate		.08¾ @	.09¼
20 per ct. lead sulphate		.08½ @	.09
35 per ct. lead sulphate		.08¼ @	.09⅛
Zinc sulphate		.03½ @	.04¼

Crude Rubber

NEW YORK, AUGUST 20, 1920.

Crude rubber has shown some signs of a rally during the past fortnight, but the market lacks the stimulation and support of buying by the trade in general, and most of the rallies have been short-lived. They have, however, had the effect of firming prices up on some varieties, and even this brief recovery is welcomed by dealers who have been compelled to sit idly and watch the market drop from day to day without being able to do anything to stem the tide.

Many short interests have come into the market during the last few weeks to buy rubber to cover on contracts falling due, but this buying has not been as heavy as was at first expected, as these short interests are covering only in a hand to mouth manner, and are not placing large orders. Short interests are not being pressed for delivery by contracting buyers due to the general slackness in the trade, and this factor also contributes to the dullness of the spot market.

Manufacturers of rubber specialities have been in the market to some extent, and importers and brokers have put through some sales to these interests. Inquiries from tire manufacturers, however, are entirely lacking and until buying from this quarter is resumed, no real activity in the spot market can be looked for, in the opinion of local dealers.

The Singapore market has firmed up visibly during the period under review, this firmness in the Eastern primary market is attributed to general buying by factories there. The London market has also strengthened somewhat in sympathy with this firmer tone, but the effect on the local market was only temporary, and the market lost the slight gains announced.

Ceylons			
Smoked sheets ribbed, spot	.33 @	.33½	
Smoked sheets ribbed, Sept.	.33½ @	—	
Smoked sheets ribbed, Oct.-Nov.	.35 @	—	
Smoked sheets ribbed, Jan.-June	.39 @	—	
Smoked sheets plain, spot	.30 @	.30¾	
First latex pale crepe	.33½ @	—	
Amber crepe, No. 1	.32 @	—	
Amber crepe, No. 2	.31 @	—	
Amber crepe, No. 3	.30 @	—	
Clean brown crepe	.29 @	.29½	
Light clean brown crepe	.29 @	—	
Roll brown crepe	.25 @	—	
Grand Central crepe	.26 @	—	
Africans			
Rio Nunez string	.27 @	.27¼	
No. 1 Bungullas	.16 @	—	
No. 2 Bungullas	.14 @	—	
Paras			
Up-river fine	.34 @	—	
Up-river medium	.34 @	—	
Up-river coarse	.22 @	—	
Caucho ball	.23½ @	—	
Islands fine	.33 @	—	
Islands coarse	.18½ @	—	
Maderia fine	.36 @	.37	
Knapsack	.44 @	.44½	
Centrals			
Corinto prime	.22 @	.23	
Esmerelda prime	.21 @	.22½	
Miscellaneous			
Guayule wet	.26 @	.27	
*Balata block Panama	.45 @	—	
Balata sheets	Nominal		
Cameta	.19 @	.19½	
Palembang	.09 @	.10	
Prime Surinam sheets	.34 @	—	

*Nominal

Scrap Rubber

NEW YORK, AUGUST 20, 1920.

Jobbers report that the market is greatly over-supplied, and the accumulation of stocks is getting so big that some of the wholesalers are finding themselves hard-pressed to find storage space for the material. Buying continues practically at a standstill, and the jobbers do not look for any improvement in the movement until later in the fall, possibly toward the end of September. Reclaimers at the present time are not disposed to show any interest in the current offerings of wholesalers.

Prices have gone down another notch during the past few weeks, and the market is in a continued slump.

	Cents per Pound.		
Boots and shoes	6.87½ @	7.25	
Arctics, trimmed	5.87½ @	6.00	
Arctics, untrimmed	5.00 @	—	
Tires—Automobile	2.75 @	3.00	
Bicycles, pneumatic	1.90 @	2.00	
Mixed hose	1.37½ @	1.50	
Air brake	— @	—	
Inner tubes, No. 1	13.00 @	14.00	
Inner tubes, No. 2	7.90 @	8.25	
Red tubes	7.50 @	7.75	